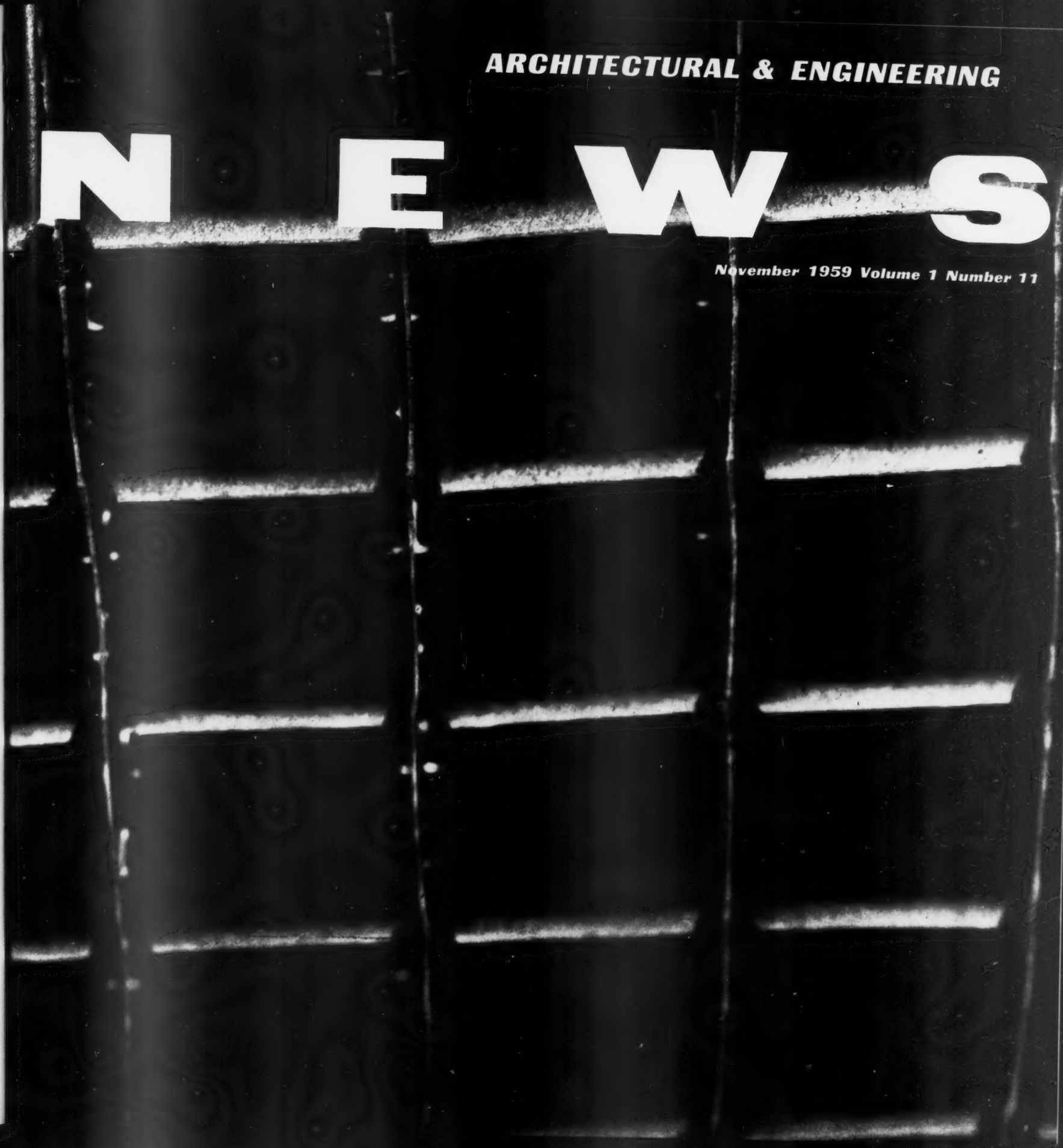
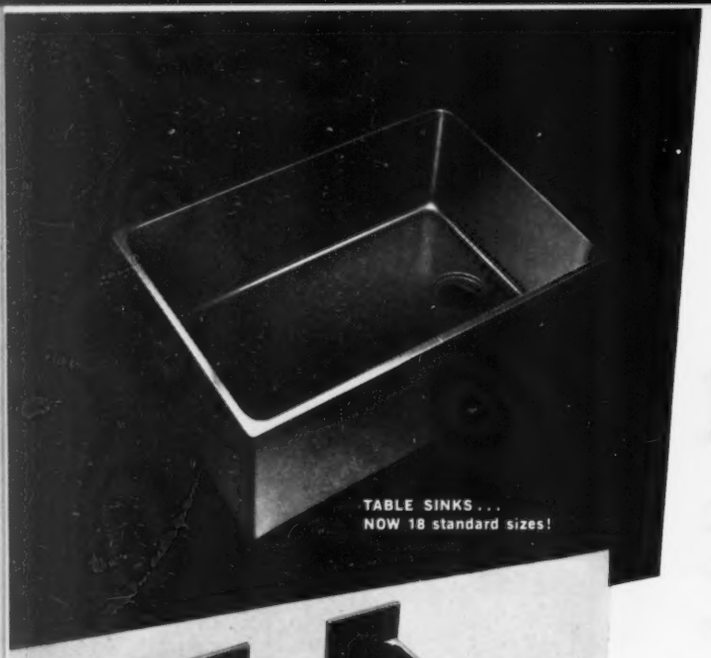
ARCHITECTURAL & ENGINEERING

NEWS

November 1959 Volume 1 Number 11



ARCHITECTURAL & ENGINEERING NEWS



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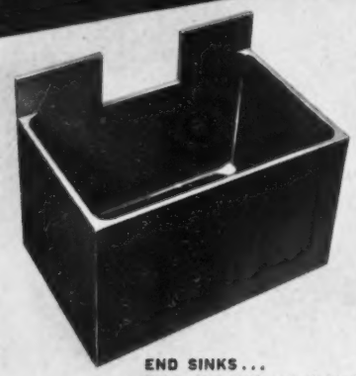

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Table Sink with splash back added.

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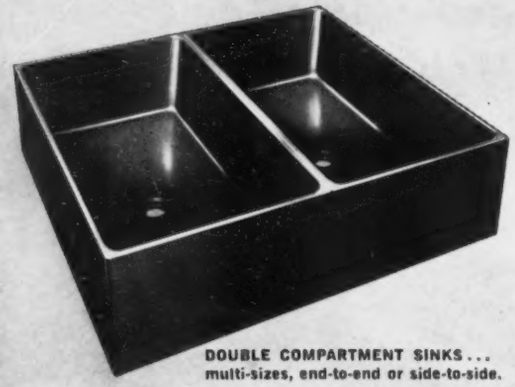
3 different sizes, 2 different styles.



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A close-up photograph of egg-crate cardboard units for reinforced concrete floor forms served as inspiration for this month's cover by Tony Palladino. Feature material in this issue deals with formwork and other construction problems in reinforced concrete.

Circle 101 for further information

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forecast

THE CONSTRUCTION OUTLOOK

From talk by Walter E. Hoadley, Jr., Treasurer, Armstrong Cork Co. Delivered as part of the panel discussion of "The Sales Outlook for 1960," Seventh Annual Marketing Conference, National Industrial Conference Board, September 18, 1959, New York City.

"Total construction—one of the most important expansionary forces during the recent general business recession and recovery—is now beginning to level off. Nevertheless, construction will continue to serve as a strong sustaining force in the national economy over the year ahead.

"New building, and especially new home construction activity, can now be seen to fluctuate more narrowly between a 'politically acceptable floor' and a 'tight money ceiling.' Construction is thus tending to become a much more stable industry than generally recognized. Variations in construction activity also seem to be increasingly in the opposite direction of the movement of general business. Just how desirable this essentially new role for construction may be for the nation, the industry, investors, and the consuming public is open to serious question. But there is now little to suggest that any change in the current role of building in the national economy is in the offing.

"New home building, which rose rapidly in 1958 from the 'politically acceptable minimum' of roughly one million starts, in part because of federal action to ease mortgage and allied credit conditions, has now definitely hit the 'tight money ceiling.' Outstanding financial commitments virtually assure a persistently high level of residential construction over the remainder of 1959, but some downward drift in new home building activity already is apparent.

"Looking to 1960, lessened availability of funds and rising interest rates now point to a 10 to 15 per cent drop in the volume of new housing. The actual volume will depend upon: (1) the competitive success of mortgages in the long-term capital markets of the nation in the face of heavy demands from both public and private sources; (2) the general level of savings and the extent to which they take the form of shares in savings and loan associations and time deposits of commercial and mutual savings banks which together regularly provide about two-thirds of the funds used to finance new housing; and (3) the success which prospective home buyers have in disposing of their present older homes as a prerequisite to making commitments for new ones. Problems of housing turnover or 'trade-in' will continue in 1960 to offer some of the most important deterrents to the fulfillment of new home buying intentions and plans of thousands of families anxious to find better living quarters.

"Current studies reveal a strong and increasing demand for higher quality housing by families in all sections of the country. This is particularly true in the economically powerful and rapidly growing annual income brackets above $7,500. These families now account for nearly 30 per cent of all families and about 55 per cent of the nation's purchasing power.

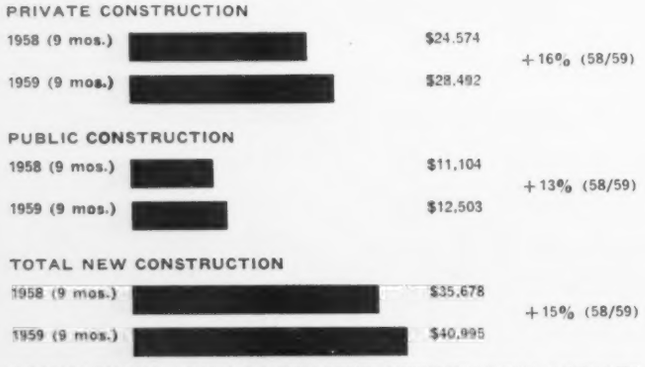
"Housing vacancies are edging up slowly but commonly involve poor quality dwellings and still do not pose a threat to new construction in most localities. The chief threat to new housing over the year ahead lies in the general area of money availability and cost, rather than in any apparent lessening of interest by prospective new home buyers.

"The outlook for repair and modernization activity is for further growth over the next 12 months. There are some scattered signs, however, that the growth rate in the home fix-up field is slackening, especially among the do-it-yourself enthusiasts. One of the principal reasons for this reduced expansion pace is the rising desire among many families, especially with teenagers, to find entirely new living quarters. This is a further reflection on the strong underlying desire for new and better homes. Rising incomes, moreover, are increasing home owner interest in having professional installations of new building materials. 'Do-it-yourself' is still a powerful market force and will remain so for the indefinite future but 'do-it-for-me' services are reporting new vigorous growth.

"All in all, the outlook for residential construction is encouraging but it will be

(Continued on page 37)

NEW CONSTRUCTION PUT IN PLACE IN CONTINENTAL UNITED STATES FIRST NINE MONTHS OF 1959 COMPARED WITH 1958*



* COMPARISONS GIVEN IN MILLIONS—CONSTRUCTION ACTIVITY REPORTS OF U.S. DEPARTMENT OF COMMERCE, WASHINGTON, D.C.

gazette

James B. Stewart, AIA, elected Vice President of Kegley, Westphall and Arbogast, of Los Angeles.

Nicholas A. Kabush, AIA, appointed to Spokane City Planning Commission.

The following new members have been appointed to the *FHA Technical Studies Advisory Committee:* Mr. Donald R. Bahnfleth, Engineering Editor of HEATING, PIPING, AND AIR CONDITIONING; Mr. John P. Gnaedinger, President of Soil Testing Services, Inc.; Dr. Sherman J. Maisel, Professor of Business Administration, University of California.

Thomas C. Shedd, PE, Consulting Engineer and former Professor of Structural Engineering at the University of Illinois, died July 11, at the age of 69.

Bruce L. Wilson, formerly chief of the Engineering Mechanics Section, appointed chief of the Mechanics Division of the *National Bureau of Standards.*

John M. Hess named Technical Director of the *Douglas Fir Plywood Association.* An architectural engineer, Hess will direct a department with five laboratories which employ 90 engineers, chemists, technical writers, wood technologists and quality supervisors.

Six faculty members added to the staff of Rhode Island School of Design: Albert S. Hill, Associate Professor of History; Virginia L. Johnson, Instructor in Apparel Design; Mrs. Lesley Morland, Instructor in Mathematics; Marvin D. Richardson, Instructor in Painting; Charles B. Fink, former architectural designer with Robinson, Green and Beretta, Instructor in Architecture; and Joseph A. Beretta, Lecturer in Architecture. Mr. Beretta is a member of the Providence architectural firm of Robinson, Green and Beretta, who designed the School of Design's dormitories and dining hall, which won an educational design award.

Office announcements

Comparetto & Associates, Architects, is now practicing as Comparetto & Kenny, Architects & Engineers, 880 Bergen Ave., Jersey City 6, N. J.

LaPierre, Litchfield & Partners, Architects, to 8 West 40th St., New York, N. Y.

Charles L. Hendrick, AIA, and Donald O. Phelps, AIA, in partnership as Hendrick and Phelps, Architects, 407 Rutland Building, Orlando, Fla.

L. L. Denson, PE, formerly with B. M. Dornblatt and Associates, Inc., to new office as Consulting Engineer, at 211 Delta Building, 348 Baronne St., New Orleans, La.

John T. Percy, Consulting Engineer, to 210 Old Loudon Road, Latham, N. Y.

Frederic P. Wiedersum Associates, architectural and engineering firm, have opened new office at 4400 Post Ave., Miami Beach, Fla.

EASIER REMODELING WITH COPPER TUBE. *Overhead work is easier* – no threading, no caulking and a copper tube installation weighs only one fourth as much as one of ferrous piping. *Saves space* – copper tube is trim, solder-joint fittings are compact. *Work is faster* – Anaconda copper tube and fittings for soil, waste and vent lines cut installation time one third to one half. *A better job* – copper tube won't rust: its smooth inside surface resists clogging. For more information and cost comparisons – write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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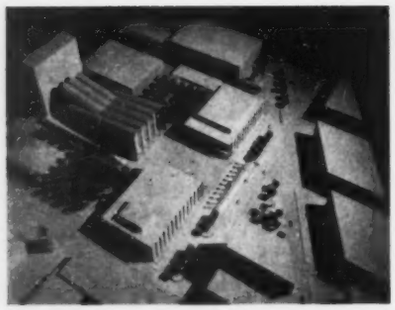
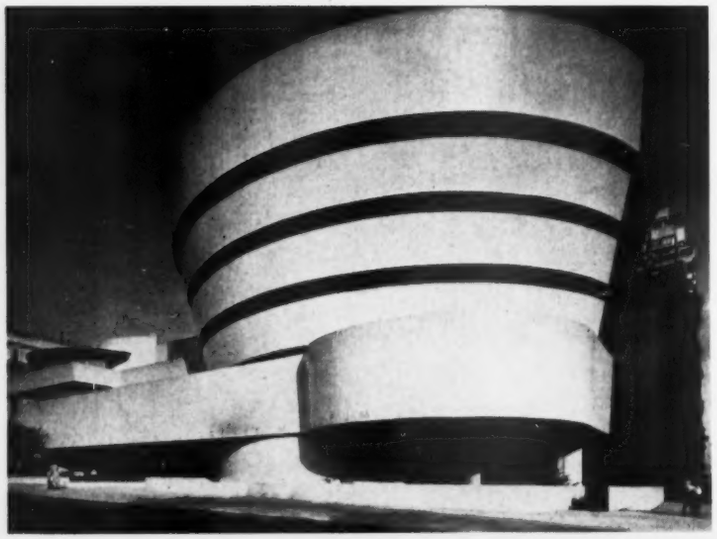


New model of Lincoln Center for the Performing Arts in New York City reflects the latest planning for the Center now under construction. The model is seen looking north from 62nd St. along Broadway. Clockwise from the left are the new Metropolitan Opera House, the Repertory Theater and Library Museum, the Julliard School (across 65th St.), Philharmonic Hall, and (across the Plaza) the Theater for the Dance. (Photo of model by Ezra Stoller).



ae news

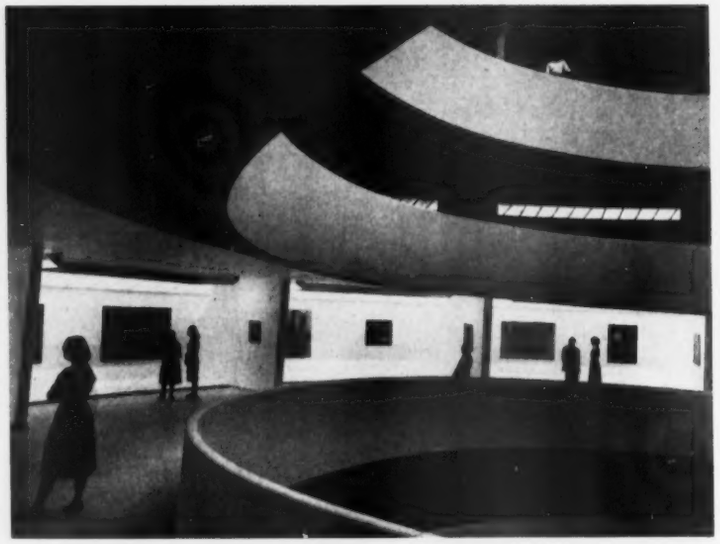
AIA portfolio

Robert Moses, Commissioner of the Department of Parks of New York City, was presented with the Allied Professions Medal of the American Institute of Architects, on October 28 at a testimonial dinner sponsored by the New York Chapter of the Institute.

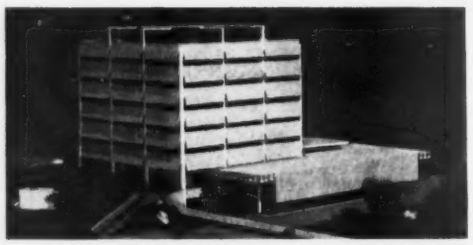
John Noble Richards, FAIA, the Institute's president made presentation of the medal which honors an individual or professional organization for achievement in the design professions related to architecture in the fields of landscape architecture, planning and engineering.

Five leading building industry associations have joined in the establishment of an F. Stuart Fitzpatrick Memorial Award to be given annually in honor of the late building industry pioneer for "outstanding achievement in the unification of the building industry." Mr. Fitzpatrick, for 25 years the manager of the construction and civic development department of the United States Chamber of Commerce, died in 1956 after a long and brilliant personal leadership in unifying the diverse elements of the building industry.

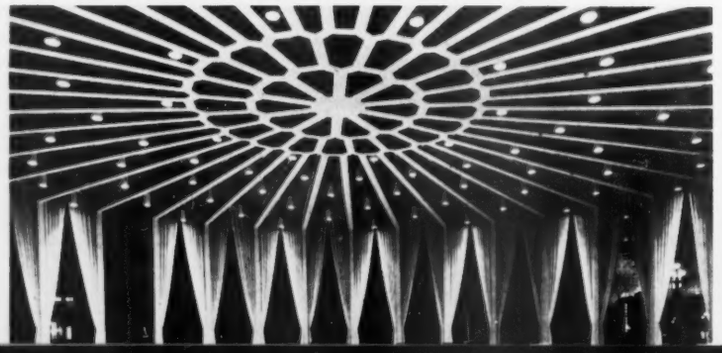
Sponsors of the Stuart Fitzpatrick Memorial Award are: The American Institute of Architects; the Building Research Institute; the Producer's Council; the Associated General Contractors, and the National Assn. of Home Builders.



The Solomon R. Guggenheim Museum, (photos left above and directly left) designed by the late Frank Lloyd Wright, opened in late October in a maelstrom of newspaper opinion, radio and television coverage and public and private comment —some enthusiastic and some deprecatory. This heated controversy has only served to stimulate attendance by thousands of New Yorkers who have waited hours in block-long lines to enter FLW's vaulted, spiral-ramped (3% grade) space which articulates in an elegant dome 92 feet above the main foyer. Since this building had a sensational opening, our local man's view is, in traditional Broadway parlance, "A hit! A must! Socko! Don't Miss It! One of the best of all time! Go!!!" (Photos by Ezra Stoller).



Construction of a $1.343 million office building on the picturesque Silver Bluff bayfront ridge just south of downtown Miami, Fla., has been announced by the Ryder System, Inc., and the Coconut Grove Bank. The building, designed by the Miami architectural firm of Weed Johnson Associates, will be seven stories high, including a garden penthouse, which will serve as Ryder executive offices. The bank will occupy the first two floors of the structure. Sun shades, used decoratively, are made of sloping concrete wall panels or spandrels which overhang the floor below.



Steel provides both beauty and structural strength for the new Crown Zellerbach Office of the American Trust Co. in San Francisco. Designed by Architects Skidmore, Owings & Merrill, the bank is created as a garden pavilion to serve as an aesthetic part of the plaza of the new Crown Zellerbach structure. The bank is basically a circular space frame, 70 feet in diameter, with no interior support. The roof structure is formed by 40-12" WF beams, 26'-9" long, radiating like the spokes of a wheel from the center of the roof to join the vertical columns at 5'-4" intervals. Columns and beams were welded at the site. The central portion of the roof consists of steel in the form of a Gothic Rose window.

Recently American and Russian housing was compared and contrasted by a panel of four members of the *New York Chapter of The American Institute of Architects* and representatives of a group of Soviet architects and builders who are in the United States on a cultural exchange.

Education

The *National Science Foundation*, an independent agency of the United States Government, announced today support of 18 projects, totaling $189,000, to encourage mathematicians, scientists and engineers to devise new laboratory equipment for school and college courses. The objective of the program is to aid competent scientists to develop new equipment of potentially wide usefulness. Support for the program will be extended during the current fiscal year and proposals must be received by the National Science Foundation by December 31, 1959. Further information may be obtained from the Course Content Improvement Section, National Science Foundation, Washington 25, D.C.

Corrigenda

The following revisions relate to "Precast Sandwich Panels," by Philip M. Grennan, PE, A/E NEWS, vol. 1, no. 10, October, 1959.

Page 12, column 2, lines 25-28 should read: "Over 80,000 square feet of five-inch thick panels were utilized for the wall enclosure of the Marietta power plant, and on the total project approximately 600,000 square feet were installed."

Page 13, column 1, line 3 should read: ". . . reaches its ultimate strength as it cures . . ."

Page 13, column 3, last line should read: ". . . utilized a 5000 #/square inch concrete."

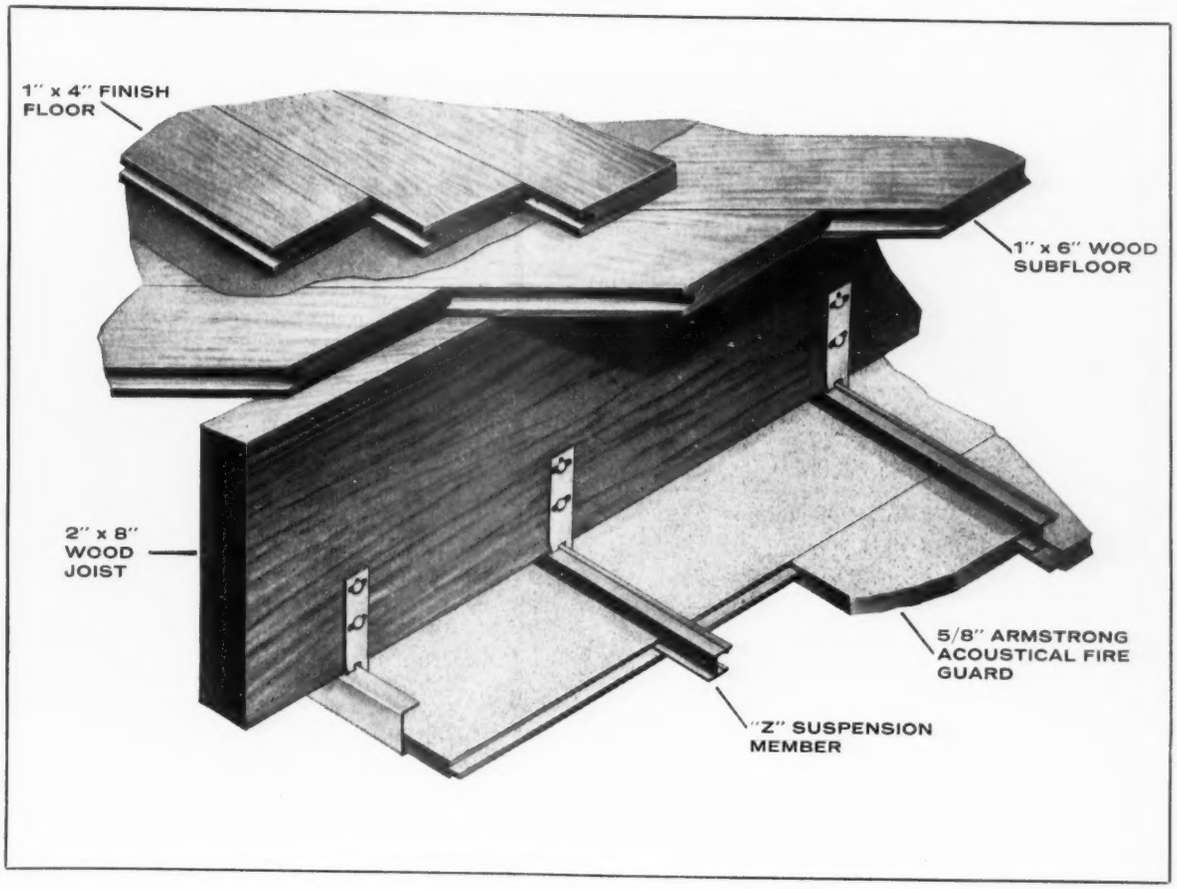
Page 14, column 3, line 17 should read: ". . . foot horizontal load has been accommodated on 14-foot spans, . . ."

West coast report

Last month, one of the nation's first all-steel permanent schools to include an auditorium-cafeteria and other units of a complete education plant was dedicated as the Mariposa Elementary School at Lancaster, Calif. Designed by the architectural firm of *Roy Donley, AIA, and Associates*, the $564,000 project provides 16 academic classrooms, 2 kindergartens, multi-purpose unit and an administration center.

(Continued on page 6)

New Armstrong Acoustical Fire Guard assembly with wood construction now has one-hour fire rating



A FLOOR-CEILING assembly utilizing wood construction and Armstrong Acoustical Fire Guard ceilings has received a *one-hour* fire-retardant time-design rating from Underwriters' Laboratories, Inc. (UL Retardant Report #4177-4).

This latest Armstrong fire-safety development now provides a more economical method of meeting one-hour code requirements with an acoustical ceiling under combustible structural members.

No additional protection, other than the tile itself, is necessary. No need to pay for extra lath or plaster. The Armstrong Acoustical Fire Guard ceiling is suspended directly from the wood joists by means of the economical "Z" suspension system. This eliminates all the mess and delay (from three to six weeks) of "wet" ceiling installation methods.

Remodeling projects can be completed sooner, because Acoustical Fire Guard can be installed during or between working hours. No "Closed for Alterations." And in new construction, buildings earn income sooner.

As previously announced, Armstrong Acoustical Fire Guard qualifies as a four-hour fire-retardant ceiling in incombustible construction.

For complete information, consult your architect, your Armstrong Acoustical Contractor, your nearest Armstrong district office, or write Armstrong Cork Company, 4211 Ryman Street, Lancaster, Pa.

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3 hour acoustical ceiling

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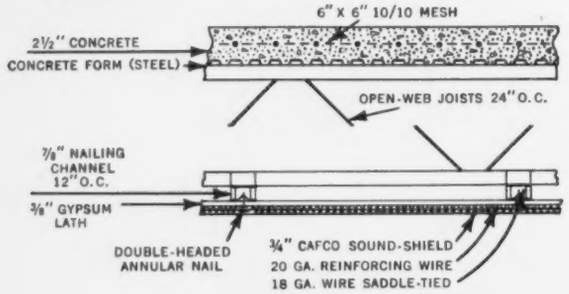

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HEAT-SHIELD—Thermal Insulation

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CEC/NSPE/ASCE news

Of particular interest to the National Society of Professional Engineers and the engineering profession were the differing approaches in Landrum-Griffin bill and the Kennedy-Ervin bill which dealt with problems peculiar to the construction industry. The NSPE had urged that should a construction industry provision be adopted, it contain adequate safeguards protecting the existing election rights of professional employees in the construction field. NSPE strongly endorsed the Landrum-Griffin approach as the preferred method, from the professional engineer's point of view.

A statement on the philosophy of unity in the engineering profession, as held by the *American Society of Civil Engineers*, has been issued by the Executive Committee of the ASCE's Board of Direction. The statement stressed that the administrative structure for cooperative effort among existing engineering societies is provided in the Engineers Joint Council for advancement of engineering in all areas, professional as well as technical. The statement refers to two current proposals, the merger of the EJC and Engineers' Council for Professional Development, and the so-called "Functional Plan" which would assign all joint technical activities to EJC, educational activities to ECPD and professional activities to the National Society of Professional Engineers. The ASCE Board of Direction considers the professional interests of all engineers can be served more effectively through a unit organization such as EJC than is possible by any one society. The statement repeats the policy adopted by ASCE in October, 1958, to clarify misunderstanding regarding the desire of ASCE to work with NSPE in the advancement of the profession.

The Third Semi-Annual Meeting of the *Consulting Engineers Council Board of Directors* was held on November 6 and 7 in Cincinnati, Ohio. Among the subjects discussed were fees and services, legal and procedural documents, a National Directory of Consulting Engineers, incorporation of consulting firms, "free" engineering and other questionable practices. Further information on the proceedings of the CEC program may be had from Larry N. Spiller, Executive Secretary, CEC, 326 Reisch Building, Springfield, Ill.

BRAB and BRI news

Mr. Robert M. Dillon, Executive Director, *Building Research Advisory Board (BRAB)* announces the availability of the BRAB report to the Federal Housing Administration on Design Criteria for Residential Slabs-on-Ground. The developed tentative method of analysis and design procedure makes provision for consideration of soil and climate conditions and on the basis of these factors, the selection of one of the following slab types: unreinforced floating slabs, reinforced floating slabs, stiffened slabs and structural slabs. After the selection has been made, the critical dimensions and required reinforcement can be determined. The report may be purchased by ordering NAS-NRC Publication 657 from the Printing and Publishing Office, National Academy of Sciences-National Research Council, 2101 Constitution Ave., Washington 25, D.C. at $2.00 per copy.

The three-day Fall Conference of The Building Research Institute will present a series of papers, panels and workshop conferences on a variety of topics: new methods of heating, design potential of metal curtain walls, sandwich panel design criteria, international building research with related sessions on proposals for new and expanded building research and on modular coordination. The conference is to be held November 17-19 at the Shoreham Hotel, Washington, D.C.

Industry and research

A dual-purpose laboratory for soil mechanics has been established as a joint facility by the Armour Research Foundation and the Illinois Institute of Technology. It will serve as a center for sponsored research in soil mechanics and as an instruction laboratory. The areas of research will include such soil dynamics problems as underground protective structures, foundation design studies, stress wave transmissions, and other basic research in soil engineering. Coordinators for the laboratory's operations are Dr. Eben Vey, professor of civil engineering at IIT, and Ernest Selig, assistant research engineer at ARF.

Architects, engineers, concrete technicians, contractors, highway officials and representatives from firms allied with the concrete construction industry participated in the program of the *Prestressed Concrete Institute's* 5th annual convention.

The program, held at Miami Beach

ae news

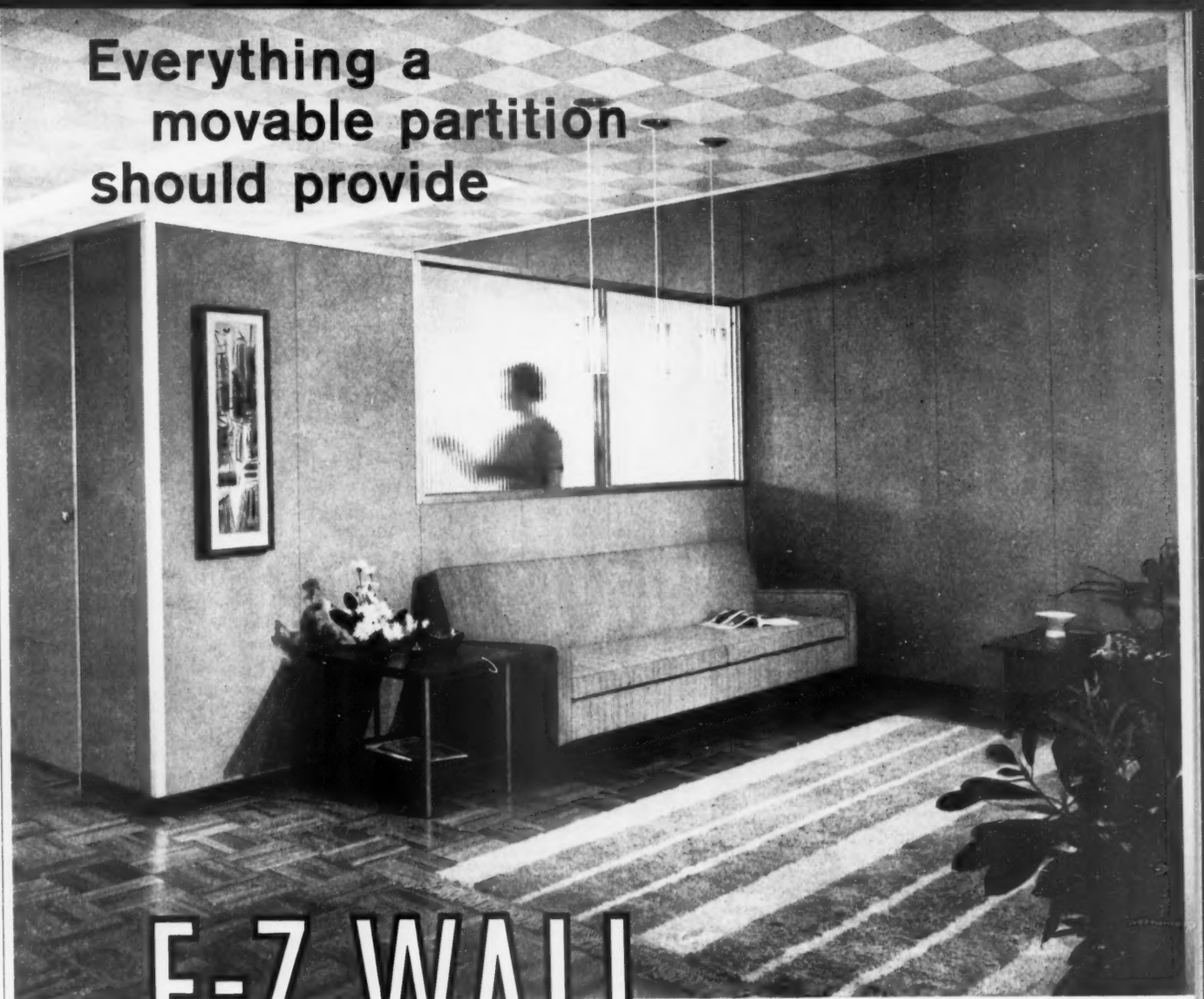
on November 1-7, highlighted research and development reports from this country and abroad, panel discussions which featured architects and prestressed concrete producers and PCI technical reports and research contributions from engineering schools throughout the country. Of interest to the conferees, were reports of post-tensioning and pre-tensioning in European construction.

A group of 28 of some of the nation's leading architects and industrial executives, with responsibilities for top management, construction and plant operation, comprise the board of sponsors of the *First Industrial Building Exposition and Congress* to be held at the New York Coliseum, December 12-15, 1960. The congress will consider such subjects as planning new construction, financing, modernization of older buildings, new types of construction, layout of equipment, construction materials, selection of sites, avoidance of maintenance problems and the like. Exhibits will be directed in similar themes. An audience is expected from every country in the world where industrialization is in progress. Although similar events have been held in the home building field, nothing of this nature has ever been scheduled for those interested in industrial building.

The *Asphalt Institute* has launched a drive to enlist general engineering support for important advances in asphalt pavement design and construction criteria. Various construction, drainage, specification and testing methods are under study by the Institute. Further information may be had from the Asphalt Institute, University of Maryland, College Park, Md.

The *Aluminum Company of America* has set into motion a master planning program for a new multi-million-dollar research and development center of a scope without precedent in the world's metal industries. Ground for the first installations will be broken within a year on a 2,400-acre tract of rolling rural land at Merwin, Pa., 28 miles east of Pittsburgh. The ensuing complex of facilities for the pursuit of science, culture, and technological

(Continued on page 38)



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*Company*_____

*Address*_____

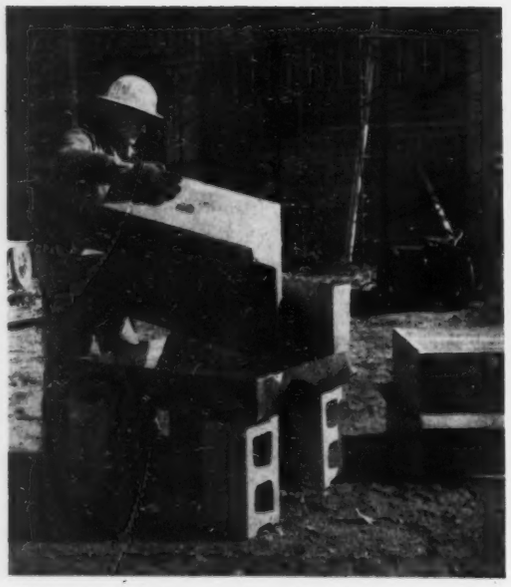
*City*_____ *Zone*____ *State*_____

Circle 105 for further information

FORMWORK

The use of random-width, rough-cut lumber for wall panel forms and egg-crate cardboard units for floor forms appreciably reduced the cost of building a concrete Air Force radar tower and provided a suitable architectural finish. Burns and Roe, Inc., New York consulting engineers designed the installation.

Because egg-crate constructure of cores is quickly and easily removed (left), cardboard cores are stripped after pouring, in considerably less time than wooden ones.



After cardboard cores are assembled, bottoms are dipped into melted paraffin to insure additional weather resistance and strength. Sealed seams prevent concrete seepage and honeycombing. Clean surfaces are produced in the finished pour.

A hammer-type stapling gun fastens flaps of cardboard cores to wooden formwork. Total time to prepare one and secure it in place—about 5 minutes. Actual experience on various defense projects establishes the cardboard cores as highly serviceable, and very economical.

The cost of building a concrete Air Force radar tower with a suitable architectural finish was appreciably reduced by the use of random-width, rough-cut lumber in formwork. According to Burns and Roe, Inc., New York consulting engineers, this project, designed for the Surface Armament Division, Sperry Gyroscope Co., (system manager of the program for this FPS-35 air-search radar installation at Thomasville, Ala.) will serve as a prototype for other sites. Over-all savings developed on the initial design may therefore be multiplied with each future installation.

Lumber of unequal width is used to form deliberate steps in the wall. In this way, any unevenness which would normally be visible now goes unnoticed, and the high cost of handrubbing and finishing is eliminated. Also, by rough-cutting the lumber, the swirls and grain structure of the wood are picked up by the concrete in curing and create a decorative effect which contributes a pleasing over-all texture to the building.

Forms for exterior walls between columns (a distance of some 20 feet) are of No. 2 grade or better lumber, 6 to 12 inches wide and between ¾ and 1-½ inches thick, with horizontal joints. The panels are designed and spaced to achieve a minimum wall thickness of 10 inches.

Panels were built up into 2-foot high sections as shown in the modular design. They were nailed into lengths of at least 17 feet, to meet the exterior pilaster spacing.

Box on top of box

Each floor, with its four supporting walls, is a monolithic pour. The building is, in effect, a series of five stacked concrete "boxes" tied in by means of the reinforcing steel.

Two types of concrete mixes were specified, as shown in the *Table of Concrete Mixes*. The 4,000 psi mix filled foundation piles; the 3,000 psi mix was poured into floor slabs and walls. A total of nearly 2,000 cubic yards of concrete will be poured into the building, reinforced by some 52 tons of No. 5 to No. 11 steel reinforcing bars.

The floors were designed as a waffle type with thin wire mesh reinforcing in the top slab between ribs. This design provided for the rigidity required by the electronic equipment, and was economical as well. In addition, the thin slab areas between waffle ribs may be omitted to leave holes of various sizes without seriously affecting the integrity of the structure.

Cardboard forms

Another building technique which cut costs and provided flexibility on the project was the use of cardboard egg-crate type cores in pouring the waffle-like floors. Cardboard forms have advantages over individually built wood or steel forms because they are lighter, more easily handled, and their size can be altered economically in any direction to suit special design requirements.

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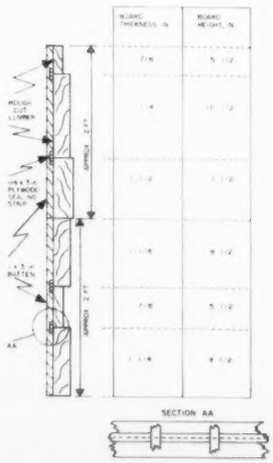


Section through wall panel forms.

Studs are nailed into place to hold them until form ties are tightened. Then, pneumatic nut-runner tightens form ties quickly and uniformly.

All wall panels were thoroughly wetted with form-oil to prevent adhesion to the concrete. Formwork is removed after seven-day cure period. If wood is deliberately cut rough, concrete will actually pick up knot formations, swirls, other grain structures. End result is decorative, hiding minor blemishes. Cone holes are filled later.

To sustain heavy equipment loads which will be imposed on the building, and to provide maximum flexibility for floor opening locations, each of the tower's five floors has a "waffle" construction with concrete ribs running in two directions. The concrete ribs and floor slab are poured integrally with the walls of the floor below and are reinforced with No. 4 and No. 8 steel rods. The ribs thus form a checkerboard design, 30 inches on center. Spacing and depth are achieved by means of cardboard egg-crate-type cores which are simpler and faster to fabricate than the special wooden or metal ones which would otherwise have been required. Cardboard shells are taped with 3-inch waterproof, pressure-sensitive tape. A honeycomb inner core is then assembled from die-cut sections and inserted in the shell. It takes only three minutes to make up one complete unit. The cost of a 24 by 24 by 14-inch core is 25 cents.

Container shells are already wax-impregnated when received. However, to guard them further against possible loss of strength from inclement weather, bottoms are immersed in hot paraffin at the job site. Actual experience has shown that even after a heavy rain workers can walk over the boxes without causing damage. The cores support a concrete floor slab with a maximum thickness of 3 inches.

Besides the advantages of simplicity, cost and time, the cores are also stripped more easily after concrete has cured. The egg-crate core is removed with a pair of pliers and is then ready for reuse.

Wall panels easily positioned

Panels are made up of varying thicknesses of lumber held together by 1-by-3-inch battens. Plywood strips nailed along the joints prevent seepage of the concrete and reduce the possibility of honeycombing in the finished wall.

Panels are coated with form oil, hoisted into position and secured with form ties and wales. Wales are left loose until studs have been inserted between them and the composite panel. Form ties are then tightened.

This procedure, while slightly different from usual construction techniques, has a distinct advantage. Normally, panels would be nailed to studs and erected as a unit. However, by sliding studs into place and confining the size of the panel, the crane required to handle heavy forms can be eliminated. Two simple slings can raise panels to the required elevation.

Forms are left up for seven days while concrete cures. After forms have been removed, cone holes are filled. They are not rubbed smooth, but are "board-marked" to blend with the surrounding rough-textured finish of the wall.

TABLE OF CONCRETE MIXES

28-day strength of cured test slab, psi	3,000	4,000
cement, lb.	94	94
sand, lb.	206	168.6
gravel, lb.	347	358.7
water, gal.	6.2	5.9
slump, in.	4	3

By sliding studs into place instead of nailing them to panels on the ground, hoisting crane is eliminated. Two-foot wide panels can be easily raised into positions with two slings. Several test panels were cast before using random-width panels on the radar tower itself. In this way, the construction staff found suitable form-oil and the best procedures for decorative finish. Height of the composite panel: 2 feet. Length: 17 feet or more, to span columns. Battens nailed across the panels hold them together. Plywood sealing strips along the seams prevent seeping of concrete and consequent honeycombing.

RETARDING CONCRETE DENSIFIERS

*by Robert K. Lockwood**

The $20 million Eastern Air Lines Terminal at New York's International Airport at Idlewild has neared completion and occupancy. This structure, considered to be the largest terminal in the world for the use of a single airline, utilized retarding densifiers and lightweight aggregate for almost all of the 20,600 cubic yards of concrete in the building. Glass and aluminum provided the exterior skin. Architect: The late Chester L. Churchill. The work is now being carried to completion by Albert C. Grey and Associated Architects and Engineers with E. Alexander Bernhard as Project Architect. Consulting Engineers: Seelye, Stevenson, Value & Knecht, with H. S. Woodward, Partner, as Project Engineer. General Contractor: The Gilbane Building Company of Providence, R.I. Rendering: Kempa.

Eastern Air Lines' new $20-million terminal building at New York's International Airport at Idlewild is nearing completion and occupancy. It is reputed to be the largest passenger terminal building for the use of any single airline. The new terminal facility is a three-level structure, slightly trapezoidal in its plan and measuring 375 by 280 feet. Passengers will walk through a 126 by 230-foot column-free lobby to either side of the building and then they will proceed along one of the two 35 by 400-foot glass enclosed "fingers" to board their planes.

The major part of the building's roof rests on 16 massive, slightly arched girders which rise 9 feet above the roof line at their centers and are supported by only three columns in the terminal's 230-foot width. Across the front of the building is a 50-foot wide section which will permit the discharge and loading of passengers to and from cars and buses within the building's interior.

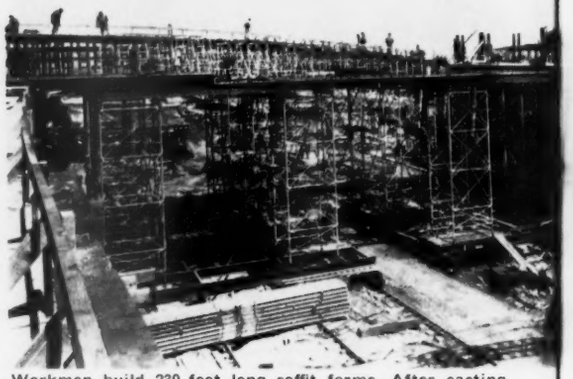
The 361,000 square foot structure which will serve jet-age travelers was designed by the late Chester L. Churchill, noted architect, and is being carried to completion by Albert C. Grey and Associated Architects and Engineers, with E. Alexander Bernhard as Project Architect. The architect made almost exclusive use of a retarding densifier in the structural concrete and glass and aluminum for the exterior skin.

Consulting engineers, Seelye, Stevenson, Value and Knecht of New York, recommended *Haydite* type concrete to save weight, since the building is supported on 6,000 pressure creosoted timber piles—some of them penetrating 70 feet into the soil below. Each pile has a design load of 25 tons. All of the 20,600 cubic yards of the concrete (with a retarding densifier) in the building was made of *Lelite* aggregate, with the exception of the foundation and the first floor slab.

"The subsoil conditions were so poor," according to Mr. E. S. Woodward, project engineer and partner in the consulting firm, "that it proved economical to use the lighter concrete for the entire structure above the first floor slab. Ordinarily, lightweight concrete is used in multi-story buildings, where the weight saved on each of many stories makes lighter foundations possible." The lightweight concrete weighs 110 to 116 pounds per cubic foot, compared to 150

Robert K. Lockwood is a Professional Engineer and a Fellow of the American Society of Civil Engineers. Prior to joining the Sika Chemical Corp., Passaic, N.J., with which he is now associated, Mr. Lockwood served ten years on the staff of the ASCE, where he rose to the position of Assistant to the Executive Secretary. He is widely known for his activity on many ASCE committees—among them the Joint ASCE-AIA committee. For nine years, until 1957, he was Executive Editor of "Civil Engineering." In his present capacity, he serves as technical liaison coordinating his firm's technical information program.

Each girder is cast in a single 10 to 12-hour working day. Although only 126-foot spans were required to provide a column-free lobby, each of the 16 girders was cast for its entire 230-foot length, proving more economical to design a continuous girder supported on three columns.



Workmen build 230-foot long soffit forms. After casting each girder, screw adjustments at base of scaffolding are lowered and the entire assembly moved on rails 15- to 18-feet, to next girder position. Side formwork, which has opening for placement of the concrete, is positioned by cranes.

Concrete girders project 8-foot above the roof and form an interesting pattern from the air. Two 35 x 400-foot glass enclosed fingers, at the left and right of the building, permit direct passenger approach from the 126 x 230-foot lobby and simultaneous loading of 16 aircraft.

pounds per cubic foot for ordinary stone concrete —representing a savings in the deadweight of approximately 22 per cent.

The 8-foot, 8-inch deep girders which support the roof are spaced 15 to 18 feet apart and extend above it to form an interesting pattern when viewed from the air or the interior of the huge lobby. Although only 126-foot spans were required to provide a column-free lobby, each of the 16 girders was cast for its entire 230-foot length, proving more economical to utilize a continuous girder supported on three columns. There is a column on either side of the 126-foot lobby and a third column to support the far end of the continuous girder. The girder cantilevers at both ends, 4 feet, 5 inches beyond the third column and 15 feet, 3 inches on the lobby side. These structural members are 2 feet, 10 inches wide at the center and taper to a 2-foot width at each end. An 8-inch wide shoulder cast integrally with the girder along the bottom chord supports the 5-inch precast roof slab.

Retarding the concrete set

Casting the girders presented some construction problems, as specifications required the entire unit to be homogeneous. To achieve this objective, the consulting engineer specified the use of a retarding densifier in the lightweight concrete mix. This additive kept the concrete plastic for approximately 15 hours—long enough so that the entire girder could be cast at one time without any portion of the concrete hardening prematurely. Each girder was cast in 10 to 12 hours without any cold joints in its interior, which would have caused planes of weakness.

Starting at both ends, and alternating, the girder form was filled with concrete through ports in the side of the formwork. As it was placed, it was vibrated continuously. The ports were at two levels. Bottom dump buckets emptied into elephant trunks which fed into the ports. This technique facilitated concreting as the engineer's specifications limited the drops to 6 feet in height. Heavy steel reinforcement along the top of the girders would also have slowed concreting if the ports had not been used. The 14-S reinforcing bars, which have an equivalent area of 1½-inch square bars, were butt welded by the thermit process. The soffit forms for the girders were mounted on traveling falsework which was lowered and moved for each pour. The side forms, resting on the bottom forms, were positioned by cranes for each girder.

Specifications called for 3-day strengths of 2,500 psi and 28-day strengths of 3,000 psi. Frequent Swiss hammer tests were used to check on the concrete strength and cylinders were broken regularly.

The placement of 20,600 cubic yards of concrete, much of it during the summer, was carried out without difficulty. The majority of construction was performed during the spring, summer, and winter of 1958. During the hot

(Continued on page 12)

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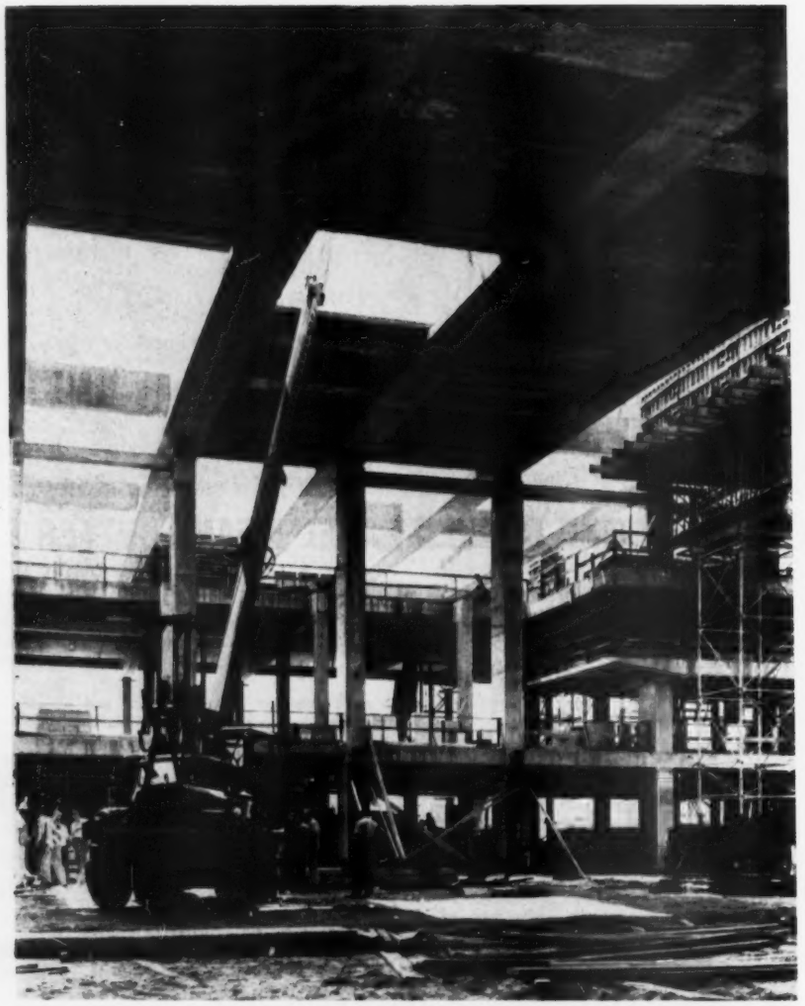
RETARDING CONCRETE Ddensifiers

(Continued from page 11)

Five-inch thick precast and reinforced roof slabs are placed on 8-inch flanges cast integrally with girders. While roof slab is being placed, workmen strip side forms from a newly cast girder, at the upper right. The use of a retarding densifier speeds the strength gain in the concrete, making possible earlier stripping and reuse of forms.



Following completion of the building's columns, which support the 16 major roof girders, the side forms (in center of photo) for these structural members are positioned by cranes. The entire 230-foot length of each 2-foot, 10-inch x 8-foot, 8-inch deep girder is cast at one time with a retarding densifier and lightweight aggregate. Girders continue over columns at each side of the building, reducing maximum deflection in the members and thereby economizing on materials.

weather, the proportion of the retarding densifier was increased to 1 pound per sack of cement to offset the more rapid rate of hardening of the concrete, which accelerates with temperature.

Simplifying use of material

The handling of lightweight concrete requires some special considerations, which have been known for some time, but not by all construction men who haven't worked with it. A few rudiments, kept in mind, can produce high-quality lightweight concrete, according to Mr. Woodward. The following eight points can aid appreciably in handling the lightweight material:

1. "It is important for workability that the aggregate be saturated for 24 hours prior to placement, although it should be dry to the touch."
2. "Uniform concrete can usually be produced more easily by keeping the fine and coarse aggregates separate, rather than in a blended mix, to prevent segregation in transit and stockpiling."
3. "At least twice as many fines should be used as would be considered normal in ordinary concrete. This should be at least 50 to 60 per cent by volume of the total aggregate. The lowest possible percentage of fines should be used with the minimal percentage of air to provide workability. A deficiency of fines should be avoided at the other extreme, because the fine material has greater density than the coarse and is important for strength."
4. "Lightweight aggregate is so sharp and angular it is impractical to obtain good workability by using only fines. Low strength mixes would be obtained with normal cement factors."
5. "Some internal lubrication is necessary for additional workability. Air entraining is usually used for this purpose."
6. "Slumps are not comparable to those for heavy concrete. For equivalent workability, lightweight concrete may have 2 or 3 inches less slump."
7. "The amount of air entraining for best results should be about twice as much as that used for conventional concrete. More air entrainment is needed as less of the larger aggregate is used. Air entraining cements, by themselves, do not produce sufficient air. The usual percentage is 6 to 8 per cent. From 1 to 2 ounces of air entrainment admixture per bag of cement is usually added. The strength loss resulting from entrained air is about half as much with lightweight concrete as with conventional mixes."
8. "Retarding densifiers are usually necessary additives. These not only add strength to the concrete, but also retard the set. This latter factor is most important in hot weather where monolithic finishes are necessary or where large pours might make cold joints a problem."

Planning Power Distribution

*Of prime consideration in building design, is the planning of an adequate, efficient and economical system of electrical distribution. Article by W. C. Heinz.**

The electrical distribution system in a commercial building has often been viewed as a necessary evil, but with the rapid growth in the use of electrical energy in such installations, it must now be a prime consideration in building design. The cost of an adequate distribution system, although still a small portion of the total building investment, is obviously increasing with increased power demands and consequently is receiving concentrated attention among building owners, engineers, architects and utilities.

The subject of electrical distribution systems embraces a broad field and obviously could not be discussed completely in a short article. We shall concentrate then on some of the newer trends and new thinking being employed in the design of distribution systems, particularly the use of higher voltages in commercial buildings. The use of the higher voltage, namely, 480 volts, is not new, of course. For years it has been the accepted utilization voltage for almost all new industrial plants. During the same period the typical commercial building was served with 208 volt service.

The concept of utilizing 480 volts in a commercial building, however, is relatively new—and is rapidly being accepted. Many of this country's newer buildings have now utilized this voltage. You have no doubt read of the tremendous savings made by using it in the Socony-Mobil building and the Coliseum in New York City, as well as other buildings of all sizes throughout the country. Obviously, it must have benefits to offer if it is being so readily accepted and these are, of course, reductions in cost of the electrical system for the building.

Load growth

This may give rise to the question—"Why has this voltage had such a wide acceptance in industry and been so long arriving at the commercial building?" Primarily, this unconformity arises because of the difference in the type load that must be served in the two areas. Almost all of the load in the industrial plant is so-called power utilization equipment—motors, etc.— while in the commercial building the major load has been lighting and small business machines. This is changing rapidly, however, and with the increased use of central air conditioning, and other direct utilization loads, more and more of the load in the commercial type building is in the power equipment class. Further, there has been considerable reduction in cost of lighting fixtures and ballasts for 277 volts. This voltage, incidentally, can be derived directly from a 480 volt system, the same way 120 volt lighting is derived from a 208 volt system. Obviously, there will always be considerable 120 volt load in a commercial building, involving such equipment as business machines, special lighting, etc. Its proportion to the total load, however, is diminishing in spite of the increased use of business machines and computers. This type load is growing but the air conditioning and other power loads are increasing much more rapidly, thus accounting for the large increase in total load. In 1935, the average load in a commercial building was about 2 volt amperes per square foot, while at present, this has increased to approximately 10 volt amperes per square foot. It is estimated that by 1970 this load will likely grow to 17 volt amperes per square foot. Obviously, this load growth must be factored into the design of an electrical system for a commercial building.

With this as a background—let's get to the subject at hand. What is the best way to handle this load and still have a flexible, reliable and economical electrical system which can serve the needs not only when the building is new but for the complete life of the building?

The commercial building is conceived to provide rentable, usable space for commercial organizations. Naturally, the building must keep pace with the times, in other words, it must maintain its youthfulness and its appeal. If this is lost, the tenant will begin to look elsewhere.

Let's look at some of the factors which control its youthfulness. Four come to mind: *(1) building design; (2) quality of materials; (3) workmanship;* and that which gives life—*(4) electric power.* High quality workmanship is an obvious necessity and continually appearing in the construction are better looking, better designed and more appealing physical materials from which the designer may choose. But let's for a moment take a look at the trends in electric power distribution—especially the trend toward higher voltages.

As mentioned previously, the higher voltage system we are referring to is 480 volts—to replace the 208 volt system now being utilized. This system is served from a wye-connected transformer with a voltage of 480 volts from line-to-line and a line-to-neutral voltage of 277 volts. The neutral is solidly grounded as it is in the present 208 volt system.

The big advantage the 480 volt system offers over the 208 volt system is in reduced investment. To serve a specified load at 208 volts requires over two times as much current as that required to serve the same load at 480 volts. Thus, one fact is immediately obvious—it takes less copper in electric conductors to handle load at 480 volts. This reduces the cost of cable and bus work in the system. Since short circuit protective devices at this voltage level are rated in amperes, a smaller protective device will be applied at 480 volts than at 208 volts. Further savings can also be made in entrance and distribution switchgear and other protective devices.

Looking at it another way, for a given investment, more power can be made available at 480 volts than at 208 volts, thus providing for future load growth at a lower initial cost.

Let us see specifically where the higher voltage system can offer some advantages and indicate a few areas where care must be exercised when selecting equipment for such systems.

Selecting the system

First, we should explain the name of the system. When we speak of the 480 volt system, we mean a system supplied by 480Y/277 volt transformer, a system having a voltage spread of 480 to 420 volts as outlined in the latest *EEI-NEMA Preferred System Voltage Report.* The maximum voltage, 480 volts has been selected as the system voltage name. Some utilities may call this system by the average voltage of 460 volts. This is based on historical precedence and refers to the same voltage system, utilizing the same equipment and using the same design criteria with the same maximum and minimum voltages. This system is to be thoroughly differentiated from the 240/416Y volt system that has occasionally been proposed but adopted in only a very few isolated cases.

Obviously, it is important to select the system voltage that best fits the particular application. The 480 volt system is not a cure-all and is not going to replace entirely the long established 208 volt system. The 480 volt system offers another system voltage that will find sensible applications in the over-all commercial building picture. Now that we have both the 480 and 208 volt systems, the natural question is, "Where is each applicable?" To answer this, in a general way, let's look at the load characteristics, KVA requirements and power sources.

Load characteristics

Some types of loads like incandescent lamps, small portable appliances, etc., must always be supplied at a 120 volt and not a higher voltage. Other types of loads like fluorescent lamps and integral horsepower motors can be as readily supplied from a 480 volt system as from a lower voltage system. A single phase 120 volt load can be served directly from a 208 volt system but requires a transformation step from a 480 volt system. Thus, the proportion of the 120 volt load to the total building load will have an important bearing on whether a 480 or 208 volt distribution system may be most economical. Cost studies show that small shops like candy stores, dress shops, shoe shops, and any other small retail store will be best served either at 120/240 volts single phase or 208 volts three phase. This is true whether they are located in the heart of a big

* *Mr. Heinz is an application engineer in the Cleveland office of General Electric Co.*

PLANNING POWER DISTRIBUTION

(Continued from page 13)

city, in a shopping center or in an isolated community. The KVA load of these shops is so small that there would be no economical advantage to the higher voltage.

Power available at a building site may be classified as either primary power or secondary power. If the site is supplied at a utilization voltage of 480, 240, or 208 volts, it is served so-called secondary power. In this case the local utility company is furnishing the transformation to the utilization voltage. If the power is available at a voltage above 600 volts, the site would be served primary power and the building owner must furnish the required transformation. The type service available naturally affects the economics of the building distribution system.

Applying the 480 volt system

Three criteria may be established as guides for applying the 480 volt system.

The first criterion concerns the total magnitude of the load. If primary power is available, the load must be above a minimum value, approximately 200 KVA, before the 480 volt system begins to show great savings over the 208 volt system. Where secondary power only is available at the building site, the economical dividing point is more obscure since regardless of the magnitude of the load, the available short circuit current from the utility network effects the selection of protective devices.

The second criterion concerns the proportionality between the directly served load and the load which must be served at 120 volts. If only 1/3 to 1/2 of the total load can be served directly at 480 or 277 volts, the 480 volt system generally shows savings. The greater percentage of the load that can be served without transformation, the greater the savings. This type load would include the integral horsepower motors, general area fluorescent lamps, etc.

The third criterion concerns the length of the feeders and risers. Naturally, the longer the feeders and risers, the greater the savings shown by the 480 volt system. If the branch feeders average more than 200 feet, the 480 volt system will nearly always be more economical. This is true regardless of the amount of load operating at 120 volts. In some cases long secondary feeders may make the 480 volt system economical even if all of the power must be utilized at 120 volts. In such a case, the savings in the distribution system more than offsets the cost of the 480 to 120 volt transformers. This is purely a question of economic balance and this point of balance must be determined for each installation.

If for a particular building a review of the three criteria just mentioned indicates a 480 volt system is more economical, there is one more important question to be answered. Can a supply of 480Y/277 volt power be obtained? When a building is supplied primary power, 480 volt power is easily obtained by using standard load center unit substations rated 480Y/277 volts.

When a building must be supplied by secondary power, it may be impractical for the utility to supply this voltage without undue economic penalty on its part. This then becomes a joint problem because the utility's problem must be considered as well as the builder's. So if you intend to use secondary power, talk first to your local utility before making a final decision on a 480 volt system. It might be of interest that in some cases the savings have been so great with a 480 volt distribution system that it has been economical to step the 208 volt network up to 480 volts inside the building and distribute at this voltage.

Design considerations

Let's turn our attention now to some of the design considerations that must be considered when applying the 480 volt system.

Because 480 volts and 208 volts are both in the 600 volt class, in many cases the same equipment may be applied to both voltages. For example, the insulation level of most cables, switchboards, some types of bus way and motor starters is no different whether rated 208 or 480 volts. Of course, there will have to be a difference in the rating of the overload devices and continuous current ratings because of the difference in amperes per KVA at the two voltages.

Aside from the application of these equipments, there are factors not present in the 208 volt system which must be considered when designing the 480 volt system. These problems have been solved many times in the past but since they are unique problems in the design of commercial building power systems, it is felt it would be worthwhile to review them.

Transformers

The first is the application of dry type transformers for stepping the voltage from 480 to 120 volts. They should be adequately rated and protected by a protective device in the power panel board or by an adequately rated safety switch with current limiting fuses located in the wiring closet. Larger transformers should be protected by circuit breakers. There are also two considerations which must be given to the application of dry type transformers in commercial buildings which are not found in industrial installations. These are, first, ventilation, and second, reduction of noise level.

Naturally, any transformer will require a sufficient volume of air to dissipate its losses. Wiring closets in general are small and may not be ventilated. Therefore, some of the larger transformers, say above 10 or 15 KVA, may require some form of ventilation to circulate air through the closets. Providing this adequate ventilation is generally not a serious problem.

Concerning the noise level, it is best to always specify quiet type low noise level transformers for mounting in wiring closets in commercial buildings. These transformers are readily available from reputable manufacturers. If necessary, sound absorbing mountings should be used and care should be taken so as not to mount the transformer on a surface which will act as a sounding board. Experience has proven that these simple precautions will reduce transformer noise to such a level that it is audible only within a few inches of the wiring closet. Always use two-winding, 480-120 volt transformers because autotransformers for this application have some serious shortcomings.

Switching and protective devices

Let's for a minute consider the application of 480 volt switching and protective devices for the main switchboard, panel boards and individual circuits. A protective device for these applications should perform safely the two basic functions: *(1) switching;* and *(2) automatically protecting a circuit under normal or abnormal conditions such as overloads or short circuits.* There are three devices which can adequately and safely perform these two functions in commercial building circuits. These are: *(1) the circuit breaker; (2) the fuse-interrupter switch combination;* and *(3) the fuse-circuit breaker combination.*

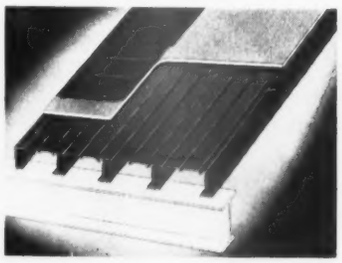
Space does not permit a complete discussion of the application of these various devices but suffice it to say that any of these must be applied within its rating. Where combination devices are used such as fuses and an interrupter switch or fuses and a circuit breaker, it is necessary to apply these devices as an approved tested combination. The advent of the current limiting fuse has been a real addition to the tool kit of the designer, but in many cases, its capabilities have been misunderstood, particularly with respect to the damage that can occur to equipment which is supposedly being protected by the current limiting fuse. Application tables are available showing which of these combinations are practical and how they should be applied. In any event, an engineer should have a thorough understanding of their characteristics and limitations before they are applied. For this reason we must look at tested combinations rather than the individual components. Since industry standards for fuses and interrupting switches do not at present cover all of these points, the only way you can be assured of adequate devices is to use only those that have been tested in combination and insist on certified test data.

Conclusion

In conclusion, all equipment necessary for employing a 480 volt system in a commercial building is available, and valuable experience has been gained in its application. In this short discussion, we have only scratched the surface in the design of such power systems. You will find reputable manufacturers of the required apparatus willing to help analyze your requirements to help arrive at the most reliable, flexible and low cost electrical system for your building.

products, equipment, materials

Reports of recent developments by industry, based on data furnished by mfrs. Inquiry cards for further information face pages 8 and 32.



Long span roof deck

MFR'S DESCRIPTION: long span *T-Steel* roof deck has been added to steel products line.

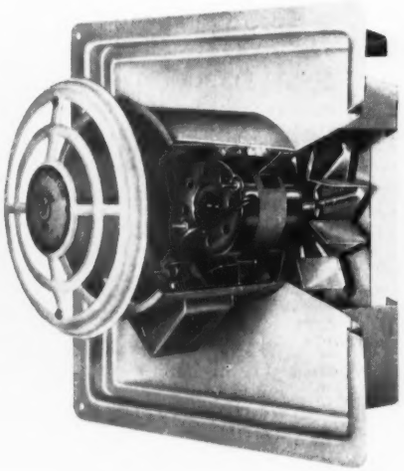
USES: roofing installations.

SPECS/FEATURES: roof deck reportedly permits designer to work economically with clear roof spans up to 32′; provides both structural roof and ceiling in one unit. Deep formed webs along one side of panel provide unit's strength. Depths are 4″, 5″, 6″ and 8″, with standard width module of 12″. Available in 16 and 18 gauges.

AIA file no. 12-C

MFR: INLAND STEEL PRODUCTS CO.

Circle 226 for further information



Centrifugal exhaust fan

MFR'S DESCRIPTION: *Perfectaire Mark IV* and *VIII* are kitchen exhaust fans, requiring only 6⅜″ opening.

USES: kitchen wall installation.

SPECS/FEATURES: units are 400 and 800 CFM. Back said to be easily removed for access to blade, motor and damper. Units are one-piece, welded frame assemblies to prevent air leakage.

AIA file no. 30-D-1

MFR: PERFECT-LINE MFG. CORP.

Circle 227 for further information

Adaptable office furniture line

MFR'S DESCRIPTION: line of office furniture called *Doric,* is now available.

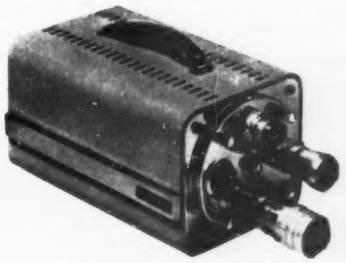
USES: office interiors.

SPECS/FEATURES: series includes over 40 units, capable of being grouped in various arrangements. Desks are available with marble, plastic laminate and variety of wood tops, with steel, brass and aluminum frames. Tops of accompanying modular units are steel core, plastic laminate, in various lengths and depths.

AIA file no. 35-H-41

MFR: CORRY JAMESTOWN CORP.

Circle 228 for further information



Direct-wire television system

MFR'S DESCRIPTION: direct-wire television system is offered at practical price.

USES: classroom aid in schools and similar uses.

SPECS/FEATURES: heart of system is lightweight vidicon camera with suggested price of $595. Features of equipment include lightweight portability, simplicity of operation and maintenance and ability of camera to provide image on any television receiver. Camera requires no special lighting and houses its own controls, according to mfr.

AIA file no. 31-i-6

MFR: ARGUS CAMERAS, DIV. SYLVANIA ELECTRIC PRODUCTS, INC.

Circle 229 for further information

LABYRINTH WATERSTOPS

A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!

LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).

2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops —a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
- Finest polyvinyl plastic resists chemical action, aging, severe weather.
- Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
- There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

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9 S. Clinton Street
Chicago 6, Illinois
Please send free sample and descriptive literature.

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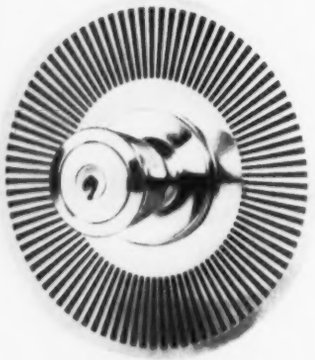
Company_____

Address_____

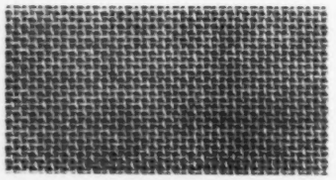
City_____ Zone____ State____

Circle 107 for further information

230 STEEL ROOF FOR WIDE DISTANCE SPANNING



231 DECORATIVE ROSETTES FOR LOCKSETS



232 DECORATIVE ACOUSTICAL FABRIC

234 SOLUTION FOR TREATING BRICKS

products, equipment, materials

Steel roof for wide distance spanning

MFR'S DESCRIPTION: *Dubl-Panl* is roof of light gauge sheet steel that can span wide distances without support.

USES: walls, flat and arched roofs.

SPECS/FEATURES: claimed 25 per cent lighter than conventional truss roofs. Mfr states features show best in flat roof spans of 50′ to 300′, arched roofs from 200′ to 1,000′ and cantilever overhangs of up to 200′. Panels form upper and lower stressed chords of roof and also serve as roof and ceiling. Diagonal struts are bolted at intersections, so tension struts prevent deflection of compression struts.

AIA file no. 12-C

MFR: BEHLEN MFG. CO.
Circle 230 for further information

Decorative rosettes for locksets

MFR'S DESCRIPTION: 4 decorative rosettes for installation behind locksets are available.

USES: residential interior doors.

SPECS/FEATURES: available in various finishes, protected by plastic coating. In diameters from 5″ to 8″.

AIA file no. 27-B

MFR: KWIKSET SALES AND SERVICE CO., SUBS. THE AMERICAN HARDWARE CORP.
Circle 231 for further information

Decorative acoustical fabric

MFR'S DESCRIPTION: *Fabricane* is acoustical fabric for various architectural uses.

USES: wall coverings, draperies, upholstery etc.

SPECS/FEATURES: material is non-flammable, non-fading and can be wiped clean with damp cloth. Over 1,400 patterns in line.

AIA file no. 28

MFR: WENDELL PLASTIC FABRICS CORP.
Circle 232 for further information

Laminated panels of various materials

MFR'S DESCRIPTION: *Laminall* process now used to produce line of laminated panels of any combination of materials.

USES: certain wall construction.

SPECS/FEATURES: process said to create molecular bond between laminates rather than ordinary adhesive condition. Substance is not affected by temperatures up to 400° F. Panels are available in any metal and core material combination in any desired finish.

AIA file no. 17-A

MFR: THE ERIE ENAMELING CO.
Circle 233 for further information

SEALANTS/ COATINGS

Solution for treating bricks

MFR'S DESCRIPTION: freedom from effloresence and staining is claimed for bricks treated with Silaneal®, a dilute siliconate solution.

USES: brick preservation.

SPECS/FEATURES: solution dries to colorless, odorless coating that reduces rate of initial water absorption. Original appearance of brick is said to be retained, permitting architects to specify lighter colors of brick.

AIA file no. 5-M

MFR: DOW CORNING CORP.
Circle 234 for further information

Resin coating for shingles

MFR'S DESCRIPTION: polyurethane "liquid resin," *Del-Coat* has been developed to permit reroofing without reshingling.

USES: roofing applications.

SPECS/FEATURES: formulation is coated on old shingles and sprinkled with sand, affording them protection against wind and weather. May be used on asphalt or wood shingles. Mfr's tests indicate impact resistance up to 160″/lbs, using 4 lb steel ball.

AIA file no. 12

MFR: DELKA RESEARCH CORP.
Circle 235 for further information

Durable aluminum paint

MFR'S DESCRIPTION: *Dri-Spray Aluminum* is durable, alu-

minum paint, intended to eliminate need for drop cloths on surfaces near painting area.

USES: outdoor painting.

SPECS/FEATURES: paint is pigmented with *Alcoa* aluminum. Overspray said to dry almost instantly in air, enabling any spattering to be wiped or brushed off easily.

AIA file no. 25-C

MFR: ALUMINUM CO. OF AMERICA; TROPICAL PAINT CO.

Circle 236 for further information

Butyl sealer with rubber insert

MFR'S DESCRIPTION: sealant *168.3* added to *Pressure-seal* line; is non-corrosive and resistant to water and water vapors, acids, detergents and bases.

USES: as seal between surfaces of glass, aluminum, steel, rubber, marble and similar materials.

SPECS/FEATURES: material consists of extruded butyl mastic with neoprene rubber insert. Said to provide elastic adhesion and resilient cushion for absorbing pressure loads.

AIA file no. 17-J

MFR: PRESSTITE DIV., AMERICAN-MARIETTA CO.

Circle 237 for further information

TILE

Ceramic tile on sheets

MFR'S DESCRIPTION: *Master-Set* glazed ceramic tiles are mounted on paper-thin sheet which permits placing of 12 tiles at one time; economical installation is claimed.

USES: interior walls.

SPECS/FEATURES: sheet mounting said to hold tiles rigidly in place, fit snugly on walls and be flexible to conform to contours. Individual tiles may be cut or snapped from sheet. Conventional adhesives may be used.

AIA file no. 23-A

MFR: AMERICAN OLEAN TILE CO., INC.

Circle 238 for further information

Italian ceramic mosaic tiles

MFR'S DESCRIPTION: *Capri* ceramic mosaic tiles, imported from Italy, are offered in variety of colors, sizes and shapes.

USES: interior and exterior applications, including curtain wall panels.

SPECS/FEATURES: finish is said to be guaranteed against fire, fading, shock and craze; tiles are non-absorbent and heat insulated. Features include chipping and breaking resistance, reduced maintenance and lightweight.

AIA file no. 23-A-2

MFR: STANDARD TILE CO., INC.

Circle 239 for further information

Tweed pattern in tile line

MFR'S DESCRIPTION: tweed pattern added to *Wearever Solid Vinyl* line of resilient flooring.

USES: commercial installations.

SPECS/FEATURES: pink, gray, brown and turquoise are available in standard 9" x 9" size, in .080 and ⅛" gauges.

AIA file no. 23-D

MFR: MASTIC TILE DIV., THE RUBEROID CO.

Circle 240 for further information

LIGHTING

High frequency fluorescent fixtures

MFR'S DESCRIPTION: series of high frequency fluorescent fixtures is announced.

USES: in experimental plant growth chambers.

SPECS/FEATURES: illumination levels from 2000 to 3000 footcandles said to be typical. Lamps powered by 15 KVA, 840 cycle generator.

AIA file no. 31-F-21

MFR: HI-FREQUENCY SYSTEMS, INC.

Circle 241 for further information

Floodlights for open areas

MFR'S DESCRIPTION: *3020 Series* of mercury vapor reflector lamp floodlights is announced.

USES: gasoline service stations, parking lots, outside storage areas and other open locations.

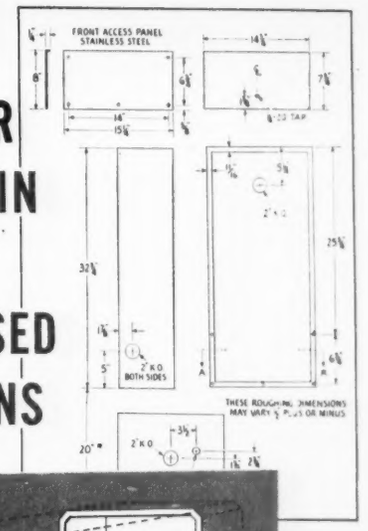
SPECS/FEATURES: units use 400 watt R52 hard glass color improved and white mercury vapor lamps, and are fully adjustable for horizontal and vertical aiming. Choice of three styles of mounting hoods.

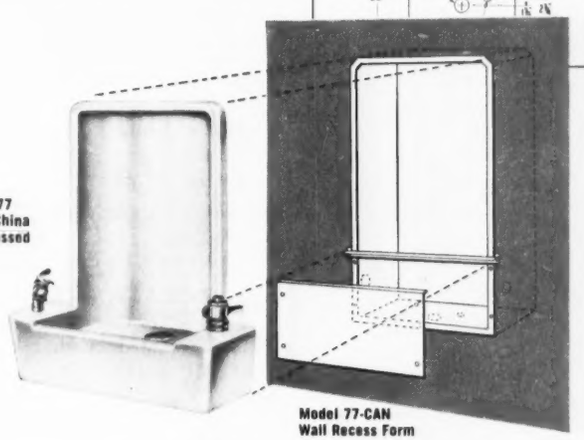
AIA file no. 31-F-22

MFR: APPLETON ELECTRIC CO.

Circle 242 for further information

NOW...IT'S EASIER THAN EVER TO GAIN THE LUXURIOUS BEAUTY OF RECESSED DRINKING FOUNTAINS





Model 77 Vitreous China Semi-Recessed

Model 77-CAN Wall Recess Form

WALL RECESS METAL FORMS for Haws Fountains... provide the exact required opening, access panels, knock-out holes, etc., for simple, efficient, economical installation. Install HAWS special metal "CAN" form in the unfinished wall, and the recessed fountain fits snugly and securely. Write for detailed specs on all HAWS recessed models, with special metal forms. Write today.

See HAWS Catalog in Sweets Architectural File

HAWS DRINKING FAUCET COMPANY

1441 FOURTH STREET • BERKELEY 10, CALIFORNIA

Circle 108 for further information

Non-combustible ceiling diffusers

MFR'S DESCRIPTION: *Gratelite Louver-Diffuser* is ceiling panel system, claimed to be non-combustible.

USES: ceiling lighting applications.

SPECS/FEATURES: 2' x 2' module panels are composed of ⅜" cubicle openings molded of non-combustible plastic, listed by UL with flame spread rating of 25. Footcandles can be varied from 50 to 400.

AIA file no. 31-F-231

MFR: EDWIN F. GUTH CO.

Circle 243 for further information

Fluorescent lamp with more illumination

MFR'S DESCRIPTION: 40 watt fluorescent lamp which lights all the way to the electrical contact pins announced as improvement in fluorescent lighting.

USES: interior lighting.

ALBRO

means Curtain Wall, Windows and Architectural Metalwork, in...

ALUMINUM, BRONZE, STAINLESS STEEL

Over thirty years of metalwork specialization assure you of exact interpretation and precise fabrication by Albro of your every design requirement. For more information, mail this coupon today or see Albro's catalogs in Sweet's.

AMP

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New York 59, N. Y.
Please send me Albro's catalogs.

Name_____

Address_____

City_____ State_____

Circle 109 for further information

products, equipment, materials

SPECS/FEATURES: lamp produces 3200 lumens. Lamp bases also provide illumination, due to translucent plastic material which has replaced opaque metal bases.

AIA file no. 31-F-21

MFR: LAMP DIV., WESTINGHOUSE ELECTRIC CORP.

Circle 244 for further information

ELECTRICAL UNITS

Weatherproof light-switch assembly

MFR'S DESCRIPTION: single-pole, weatherproof, pilot light-switch assembly is available, for installation wherever moisture problem exists.

USES: interior and exterior applications.

SPECS/FEATURES: unit will fit 2-gang "T" box or any 2-gang outlet box. Is made of .040 brass, spray-finished in aluminum.

AIA file no. 31-C-71

MFR: PERFECT-LINE MFG. CORP.

Circle 245 for further information

Self-contained metering switchboards

MFR'S DESCRIPTION: *Uni-Power* metering switchboards are self-contained, free-standing units.

USES: switching applications.

SPECS/FEATURES: units include main disconnect, meter bases and distribution disconnects. Disconnects, either main or distribution, available in circuit breaker or fusible type. Sections may be interchanged at job site. Meter space is provided on back and front; no interior wiring is necessary, according to mfr.

AIA file no. 31-D-2

MFR: WALKER ELECTRICAL CO., INC.

Circle 246 for further information

Time switch has precise timing

MFR'S DESCRIPTION: *#4100 Hourmaster* time switch, stated to offer "to-the-minute" accuracy in operation.

USES: timing operations.

SPECS/FEATURES: unit can be set for from 1 to 24 "on-off" operations per day, hourly. May be set for every hour, every second or third hour, etc. "On" periods may be from 2 to 55 minutes.

AIA file no. 31-i-24

MFR: TORK TIME CONTROLS. INC.

Circle 247 for further information

INTERIOR UNITS

Residential tables and sideboards

MFR'S DESCRIPTION: wood cocktail tables and sideboards by Ouwenbroek of the Netherlands are offered.

USES: residential interiors.

SPECS/FEATURES: units are available in teak or walnut. Table has planter insertion.

AIA file no. 28-A-1

MFR: DANIEL E. LEWITT ASSOCIATES

Circle 248 for further information

Storage system for offices

MFR'S DESCRIPTION: system consisting of storage components and desk tops which can be arranged between poles, in several variations, is announced.

USES: rearrangement of office space.

SPECS/FEATURES: units include writing surfaces, storage for filing, books, dictation equipment, etc. Components are suspended between adjustable aluminum poles, spring-fitted between floor and ceiling.

AIA file no. 35-H-41

MFR: HERMAN MILLER FURNITURE CO.

Circle 249 for further information

WOOD UNITS

Grooved/striated hardboards

MFR'S DESCRIPTION: striated and grooved hardboards announced as surface treatment.

USES: interior and exterior uses.

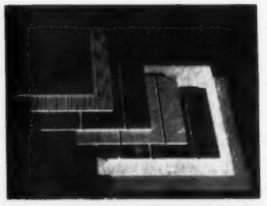
SPECS/FEATURES: U-grooved and V-grooved patterns have

246 SELF-CONTAINED METERING SWITCHBOARDS

247 TIME SWITCH HAS PRECISE TIMING

248 RESIDENTIAL TABLES AND SIDEBOARDS

249 STORAGE SYSTEM FOR OFFICES



250 GROOVED/STRIATED HARDBOARDS

been developed for *Weytex* in smooth and striated styles. *Weytones,* pre-finished hardboards in both tempered and standard types, also have this feature.
AIA file no. 19-D-2

MFR: SILVATEK DIV., WEYERHAEUSER TIMBER CO.
Circle 250 for further information

Laminated block flooring

MFR'S DESCRIPTION: *Modernwood* is laminated block flooring of highland oak, cross laminated with waterproof glue.

USES: residential installation over concrete, plywood, terrazzo or fiberboard.

SPECS/FEATURES: can be laid in mastic directly on subflooring, saving both time and labor. 9" x 9" squares are resistant to alcohol, ammonia, etc.; will not swell, shrink, warp or buckle, according to mfr.
AIA file no. 19-E-9

MFR: MODERNWOOD CO.
Circle 251 for further information

PLUMBING

Kettle and pot fillers

MFR'S DESCRIPTION: series of double joint, swing nozzle, pot and kettle fillers for filling stove and floor vessels, is offered.

USES: institutional kitchens.

SPECS/FEATURES: *Model B-580* is designed for wall or splash-back mounting; *Model B585* for deck or shelf mounting. Units extend to 18" and swing or double back to reach all receptacles. Constructed of chromium plated brass; have ½" IPS inlets.
AIA file no. 35-C

MFR: T&S BRASS AND BRONZE WORKS, INC.
Circle 252 for further information

Compact gas/water lab unit

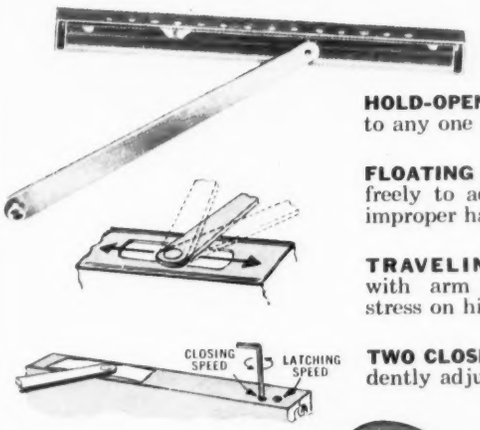
MFR'S DESCRIPTION: a compact combination gas and water fixture for laboratory service is offered by T&S Brass and Bronze Works, Inc.

USES: laboratory work areas.

SPECS/FEATURES: to accomplish multiple functions, often lab fixtures are very massive. This unit is compact, simplified

MULTI·CHECK®
FOR INTERIOR DOORS

one-piece arm "hides away" when door is closed



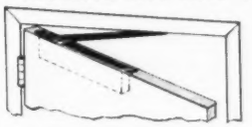
HOLD-OPEN quickly adjustable to any one of 7 points.

FLOATING ROLLER in arm rides freely to adjust to door sag or improper hanging.

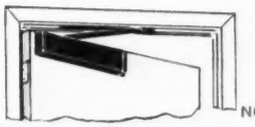
TRAVELING SPINDLE moves with arm to relieve leverage stress on hinges and door frame.

TWO CLOSING SPEEDS independently adjustable.

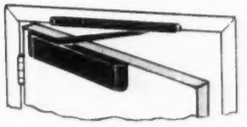
MOUNTS ANY WAY YOU LIKE . . .



mortised in the door (right or left hand)



push side—surface mounted (right or left hand)
NO SPECIAL BRACKET NEEDED



pull side—surface mounted (right or left hand)

one set of fixtures for all surface mountings

write for complete details and installation templates

MULTI·CHECK

THE OSCAR C. RIXSON COMPANY
9100 west belmont avenue • franklin park, illinois
CANADIAN PLANT: 43 racine rd. (rexdale P.O.) toronto, canada
Circle 110 for further information

products, equipment, materials

with a heavy duty gooseneck connection. Fixture stands 10½" above the work surface and its width dimension is approx. 10". It has ¼" IPS female inlets for water and gas, two hose cocks and a removable ten-serration hose tip on the gooseneck. Shank is 1½" diameter. Color coded plastic indexes are provided for gas, air or vacuum, as specified. Detail drawings available.

AIA file no. 35-E

MFR: T&S BRASS AND BRONZE WORKS, INC.

Circle 253 for further information

Hot/cold electric water dispenser

MFR'S DESCRIPTION: electric hot and cold water dispenser is offered which requires only 1 sq ft of floor space.

USES: motels without restaurant facilities.

SPECS/FEATURES: unit requires only one electrical outlet. Supplies 60 6-ounce cups of hot and up to 4½ gallons of cooled water per hour.

AIA file no. 29-D-42

MFR: CORDLEY & HAYES

Circle 254 for further information

Oval-shaped drinking fountains

MFR'S DESCRIPTION: *Yukon* and *Raritan* fountains are drinking fountains, featuring elongated oval design with circular shaped bowl.

USES: institutional applications.

SPECS/FEATURES: units are of enameled cast iron, available in white only. Bubbler pad is elevated ¼" over level of bowl.

AIA file no. 29-H-1

MFR: PLUMBING & HEATING DIV., AMERICAN-STANDARD

Circle 255 for further information

Wall-mounted multi-person shower

MFR'S DESCRIPTION: wall-mounted, multiperson shower is added to line of column showers.

Circle 111 for further information

Pittsburgh Fab-Form, available in lengths up to 28 feet, 3 inches with ⅝-inch corrugation, is handled easily on steel joists by one man at St. Regis Church and School in Trafford, Pa. Contractor H. Justin Brown & Son, Mt. Lebanon, Pa., reported it took four men just one day to lay 10,800 square feet of Fab-Form. Fab-Form was sold and engineered by W. N. Dambach, Inc., Pittsburgh, Pa.

New Fab-Form by Pittsburgh Steel Cuts Floor and Roof Slab Costs, Gives Greater Length and Width

Fab-Form, a brand new addition to Pittsburgh Steel Products' line of quality construction products, builds in savings of materials and erection time for concrete floor and roof slabs.

New Fab-Form—longest and widest corrugated, permanent steel form for slabs poured over joists—reduces the number of end and side laps through its 32-inch cover width and extra length.

In addition, Fab-Form has an exclusive new welding method that is literally a snap.

Fab-Form is fabricated:

- In standard lengths, plus other lengths up to 28 feet, 3 inches—twice as long as most others.
- In a cover width of 32 inches.
- With deepest corrugation — a full ⅝-inch — of any standard steel centering.
- Plain or Bonderized with an exclusive baked-on duPont red oxide primer that provides weather protection and serves as an excellent primer base for further painting of exposed underside. Fab-Form's special protective finish prevents water stain or "white rust."

Fab-Form's uniform strength comes from high-tensile (90,000 to 100,000 psi), 27 gage, cold rolled steel sheet.

- **Ideal for School**—One of the first construction jobs in which Fab-Form was used was the new St. Regis Church and School in Trafford, Pa. Architect for the job was Ermes Brunettini, AIA, Verona, Pa. More than 33,000 square feet of Fab-Form supports three-inch concrete floor and roof slabs set on steel joists.

Thomas A. Laboon, job superintendent for H. Justin Brown & Son, general contractors from Mt. Lebanon, Pa., said that the deeper corrugations in Fab-Form helped make a stronger slab. Pittsburgh Steel's six-inch square mesh made of No. 6 gage wire was used for reinforcing.

Fab-Form's speed of installation also impressed Mr. Laboon. He said that it took four men just one day to lay 10,800 square feet of Fab-Form on roof joists. After sections were laid, welders using the unique Fab-Form Welding Washer Stick made plug welds to every other joist.

- **Easy as A, B, C**—Welders found using the exclusive Fab-Form Welding Washer Stick unusually simple. Pittsburgh Steel developed the unique stick so that each welder bent up the end washer on the stick, made his plug weld and snapped off the washer—in just seconds. This eliminates fumbling in heavy gloves for individual washers. Next, mesh was installed and the slab was poured.

"Everything came out exactly right with no scrapped material," said Mr. Laboon in commenting on the economy of Fab-Form. "The side and end-lapping worked out exactly right.

"On top of that," he added, "you know that when Fab-Form is down you have a material that will take a beating from men tramping on it, buggies and even rough weather.

"Later, after the slab is poured,

Deepest corrugation, 5/8-inch, of all standard steel centering is available with Fab-Form. Job Superintendent Thomas A. Laboon, left, shown with Pittsburgh Steel Products Salesman C. W. Bainbridge Jr., said deep corrugation helped make a stronger slab.

Rugged Fab-Form, longest and widest corrugated steel centering for concrete floor and roof slabs on the market, easily supports a three-inch roof slab. Fab-Form saves material and erection time.

you are confident that the same material will go a long way in helping provide sound construction."

Join the growing list of satisfied Fab-Form users. Your first application will convince you of Fab-Form's advantages . . . from Pittsburgh Steel Products Division, a leader in the construction products field for more than 30 years.

Write today for literature or, better yet, contact the nearest Pittsburgh Steel Products sales office listed here.

Pouring is no problem with Fab-Form. Here a buggy has rolled over Fab-Form without damaging the material. Six-inch square mesh made of No. 6 gage wire is from Pittsburgh Steel, too.

Exclusive Fab-Form Welding Washer Stick reduces installation time. After the end washer on the stick is bent up, the welder makes a plug weld and snaps off the washer. Then mesh is installed and slab is poured.

Fab-Form

Pittsburgh Steel Products

a division of **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

DISTRICT SALES OFFICES

Atlanta, Chicago, Cleveland, Dayton, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Tulsa, Warren, Ohio

products, equipment, materials

USES: industrial, athletic, etc. facilities.

SPECS/FEATURES: unit has two or three adjustable shower heads, soap trays and control valves. One set of piping serves two or three shower facilities. Finished in stainless or pressed steel, vitreous-enameled in white or colors.

AIA file no. 29-H-3

MFR: BRADLEY WASHFOUNTAIN CO.

Circle 256 for further information

DOORS/WINDOWS

Door protects against heat loss

MFR'S DESCRIPTION: *Air Door* is package unit, in six opening widths, designed to keep weather outside.

USES: commercial and institutional applications.

SPECS/FEATURES: insulating barrier of air circulates within opening, keeping dirt and unpleasant weather outside, while permitting traffic through the door. Mfr claims heating and cooling costs are reduced.

AIA file no. 16

MFR: MODERNFOLD DIV., NEW CASTLE PRODUCTS, INC.

Circle 257 for further information

Insulated sliding glass door

MFR'S DESCRIPTION: *Thermo Door* is insulated, sliding glass door, designed for use with dual glazing.

USES: residential, institutional, commercial and monumental construction.

SPECS/FEATURES: mfr states unit's construction prevents heat flow through extrusions, thereby controlling heat loss as well as moisture condensation on frame interior. Glazed unit also stated to be barrier against exterior heat.

AIA file no. 16

MFR: ADOR CORP.

Circle 258 for further information

Circle 111 for further information

products, equipment, materials

Aluminum horizontal slide window

MFR'S DESCRIPTION: *Series 700* is aluminum horizontal slide window with fin trim which forms integral part of frame to eliminate need for outside wood trim.

USES: residential, institutional and commercial applications.

SPECS/FEATURES: main frame and vent sections are of extruded aluminum; vent slide channels are stainless steel. Single slide, picture slide, slide-ventilating picture and fixed types are available. Sizes range from 2′ x 2′ up to 4′ x 10′.

AIA file no. 16-E

MFR: TRUSCON DIV. REPUBLIC STEEL

Circle 259 for further information

Controls in dumbwaiter door frame

MFR'S DESCRIPTION: control station mounted in door frame of electric dumbwaiters is stated as innovation eliminating need of separate panel mounting.

USES: electric dumbwaiter hoistway openings.

SPECS/FEATURES: this door frame equipped with push button control and signal panel, centered and mounted inside of frame. Where doors serve floor level landing, push button stations are situated near top of frame. Installation said to be simplified.

AIA file no. 33-D

MFR: SEDGWICK MACHINE WORKS, INC.

Circle 260 for further information

Overhead door line increased

MFR'S DESCRIPTION: commercial and industrial overhead doors have been added to *Pacemaker* line.

USES: industrial installations.

SPECS/FEATURES: available in wide and narrow panel models, in widths from 6′-4″ to 16′-3″. Sash sections are solid or have optional section or sections open for glass.

AIA file no. 16-D

MFR: MCKEE DOOR CO.

Circle 261 for further information

Window combines wood and aluminum

MFR'S DESCRIPTION: *Wood-A-Lume* window is said to combine insulating qualities of wood and maintenance-free qualities of aluminum.

USES: residential installation.

SPECS/FEATURES: unit reported to have decorative, condensation-free wood interior surface, bonded to durable, rust-proof aluminum for exterior protection. Can be nailed directly into studs without opening preparations. Available in casement, awning and picture window types.

AIA file no. 16-L

MFR: JERVIS CORP.

Circle 262 for further information

Soundproof louver door

MFR'S DESCRIPTION: soundproof louver door is offered with hollow metal construction.

USES: various applications, particularly in air-conditioned rooms where wall louvers have been necessary.

SPECS/FEATURES: sound barrier in door said to reduce transmission to 32 decibels. Air passage is not retarded.

AIA file no. 16-F

MFR: PIONEER FIREPROOF DOOR CORP.

Circle 263 for further information

Hollow core flush doors

MFR'S DESCRIPTION: line of ceiling high hollow core, flush doors is now available.

USES: interior installations.

SPECS/FEATURES: size is 7′-11″; may be trimmed as much as 3″ for adaptable fitting. Doors eliminate overhead framing, according to mfr.

AIA file no. 19-E-1

MFR: SIMPSON LOGGING CO.

Circle 264 for further information

Folding doors for exhibition areas

MFR'S DESCRIPTION: *Customfold* doors are folding doors designed to custom specifications.

USES: large interior spaces such as exhibition areas.

SPECS/FEATURES: units are pulled along ceiling tracks and locked together in sections. Storage space for 30′ wall is said to be 6′ x 12′. Units are vinyl covered; maintain sound level below 25 decibels. System is used in New York's Coliseum.

AIA file no. 16-M

MFR: AMERICAN ACCORDION-FOLD DOORS, INC.

Circle 265 for further information

HVAC

Heat pump in single cabinet

MFR'S DESCRIPTION: 3 ton model, built in one weatherproof cabinet, is added to line of heat pumps.

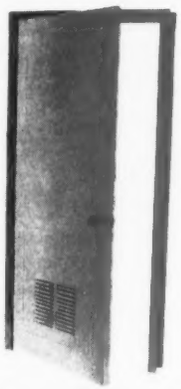
USES: commercial and residential applications.

SPECS/FEATURES: with duct attached, unit can be mounted on roof of structure and heat and cool interior either through single large diffuser or through ductwork. Auxiliary resistance heaters are prefabricated and

how many communication system salesmen do you need to see?
Wireless Paging
Paging
Intercom
Public Address
Background Music
Private Automatic Telephone
Emergency & Evacuation Systems
Hospital or School Communications Systems
DuKane
NINE SUPPLIERS.... or.... ONE CONSULTANT?
Find Your Nearest Distributor in The 'Yellow Pages'
New drafting and planning aid: DuKane's chart of electronic communication equipment symbols. Write on your letterhead for a free copy.
Of all the manufacturers of voice communication equipment, only DuKane offers a complete selection. Only DuKane offers nationwide sales and service coverage by experienced, factory-trained engineering distributors. Only DuKane custom-engineers systems from mass-produced components, for maximum service plus maximum economy. Put DuKane's 300 sound system consultants to work for you!
DuKane CORPORATION
INSTANT VOICE COMMUNICATIONS
• AEN-119 • St. Charles, Illinois

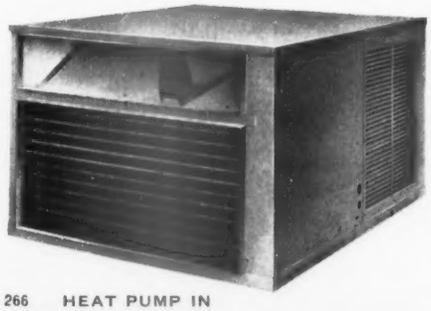
Circle 112 for further information

262 WINDOW COMBINES WOOD AND ALUMINUM



263 SOUNDPROOF LOUVER DOOR

264 HOLLOW CORE FLUSH DOORS



266 HEAT PUMP IN SINGLE CABINET

install easily on discharge side when needed. Summer and winter operation is controlled by single thermostat.

AIA file no. 30-C-15

MFR: CARRIER CORP.

Circle 266 for further information

Refrigeration machines with 400-800 ton capacity

MFR'S DESCRIPTION: line of 2-stage *Tonrac* refrigeration machines is available for applications requiring 400 to 800 ton operating capacity.

USES: provide chilled water for air conditioning large buildings and factories.

SPECS/FEATURES: unit operates on Refrigerant 11. Reportedly has quiet, vibrationless operation. Capacity is varied by adjustable inlet guide vanes; load control is automatic.

AIA file no. 30-F-21

MFR: INDUSTRIAL DIV., AMERICAN-STANDARD

Circle 267 for further information

OFFICE AIDS

Automatic telephone system

MFR'S DESCRIPTION: *10/1* system is automatic telephone system featuring economical installation.

USES: internal communication in small businesses.

SPECS/FEATURES: lightweight, automatic switchboard is said to be smaller than portable typewriter case, easy to install. Two to ten lines are possible; provision can be made for loudspeaker paging. Instruments are available for desk or wall, in black or colors.

AIA file no. 31-i-51

MFR: DUKANE CORP.

Circle 268 for further information

Electric plastic binding machine

MFR'S DESCRIPTION: *GBC Model 16 EB Electro-Binder* is all electric plastic binding machine.

USES: office binding of books, records, etc.

SPECS/FEATURES: according to mfr, unit is 60 to 100 per cent faster than manual operation. Portable machine occupies 2 sq ft; binds books of any size,

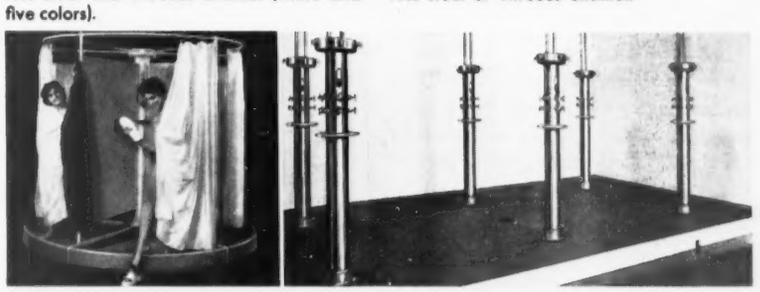
BRADLEY PRODUCTS
provide washroom economies

GROUP WASHFOUNTAINS ★ MULTI-PERSON SHOWERS

BRADLEY WASHFOUNTAINS serve groups 8 to 10 at the 54-in. full circular model yet each requires but one set of piping connections. Foot-control eliminates faucets, (no contagious contacts)—self-flushing bowl prevents collection of used water for maximum in sanitation. The semicircular (wall type) serves 5 to 6.

DUO-WASHFOUNTAINS have foot-control and self-flushing bowl also. No contagious faucet contacts. Does the job of two lavatories at lower cost. Stainless steel and vitreous enamel (white and five colors).

COUNTERTYPE WASHFOUNTAIN has same sanitary features and foot-control, and can be supplied with glass filler faucet and/or bubbler. Bowls are made of stainless steel or vitreous enamel.



BRADLEY MULTI-PERSON SHOWERS are furnished partially assembled for quick installation. They may be supplied with stall-separating partitions and curtains (see upper left), or the Shower Column alone for greatest economy. You get five showers at one installation cost and only three piping connections for all five showers. Each bather has complete control of water volume and temperature. Three heights available, 6', 5'6", and, for smaller folks, —5'.

BRADLEY WASHFOUNTAIN CO., 2357 W. Michigan St., Milwaukee 1, Wis.

Distributed Through Plumbing Wholesalers

BRADLEY *washfountains and multi-person showers*

Our colorful Catalog 5601 (mailed free on request) has helpful data on washroom economies . . .

Circle 113 for further information

HERE'S NEWS

You Can Have A Complete Radiant-Acoustical Ceiling For $1.72 Per Square Foot

James A. Phillips Co., New York City, N. Y., won the contract for the above installation with a bid of $1.72 per square foot. Illustrated is part of 10,000 square feet of SIMPLEX radiant-acoustical ceiling in the new engineering offices of the Long Island Rail Road, Jamaica, N. Y.

This ceiling provides heating and cooling, ventilation, acoustical correction, support for recessed lights and a permanent, low maintenance surface (anodized aluminum).

Since the above, three other SIMPLEX radiant-acoustical ceilings have been installed for the L.I.R.R. as part of its rehabilitation program. More are on the drawing boards.

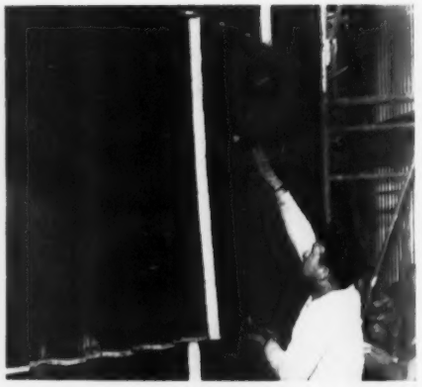
Radiant-acoustical ceilings need not be costly if care is exercised in selection. The SIMPLEX radiant-acoustical ceiling is the only one so completely integrated. It does the entire job of comfort conditioning with one medium, air. Other systems use a combination of water and air.

Complete information is available in our folder RA9. it contains complete information on design, photographs of other installations, details and working specifications.

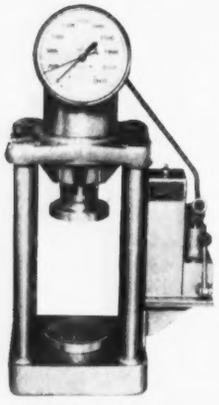
Simplex Ceiling Corp
552 West 52 Street, New York 19, N. Y.

Circle 114 for further information

271 WALLCOVERING FABRIC LINE



272 SPUN MINERAL WOOL FELT INSULATION



273 PORTABLE CONCRETE TESTING MACHINE

275 WEIGHT DESIGNATED ON METAL ROLLS

length and thickness from 3/16" to 2".
AIA file no. 35-H-4
MFR: GENERAL BINDING CORP.
Circle 269 for further information

Adhesive for paper paste-ups

MFR'S DESCRIPTION: *Lectrostik* is translucent adhesive in dry bar form.

USES: paper paste-ups.

SPECS/FEATURES: application is by means of electric coater. Material is reported not to spoil, dry out, change chemically, stain, wrinkle, shrink or curl paper. Paper can be mounted, removed and remounted without recoating.
AIA file no. 35-H
MFR: HALBER CORP.
Circle 270 for further information

MISCELLANY

Wallcovering fabric line

MFR'S DESCRIPTION: *Cotter's Loom* pattern has been added to *Vicrtex* line of vinyl wallcoverings.

USES: interior walls.

SPECS/FEATURES: designed to resemble Scotch fabrics, material is said to be tough and durable. Available in 28 colors. Material is waterproof, weatherproof, fade, stain and flame-resistant, according to mfr.
AIA file no. 28-C
MFR: L. E. CARPENTER & CO., INC.
Circle 271 for further information

Spun mineral wool felt insulation

MFR'S DESCRIPTION: line of spun mineral wool felt insulation, designed for high temperature industrial equipment and refrigeration systems, is available.

USES: in ovens, dryers, stoves, ducts, etc.

SPECS/FEATURES: available in densities from 3 to 8 lbs pcf, with variety of surface facings. Made from spun mineral fibers with a phenolic resin binder. May be used up to 600° F., according to mfr. Material is said to be lightweight, resilient, incombustible, non-corrosive and moisture resistant.
AIA file no. 37-D-2
MFR: BALDWIN-EHRET-HILL, INC.
Circle 272 for further information

Portable concrete testing machine

MFR'S DESCRIPTION: model *CT-710*, 250,000 lb capacity portable concrete testing machine has been announced.

USES: concrete testing on job site.

SPECS/FEATURES: designed for testing standard 6" x 12" cylinders, beams, 2" cubes, concrete blocks and other concrete specimens. Can be used in central laboratory or in field applications.
AIA file no. 4-A-1
MFR: SOILTEST, INC.
Circle 273 for further information

Neoprene and metal flashing

MFR'S DESCRIPTION: *Expand-o-flash* is neoprene and metal flashing material, able to withstand temperatures from minus 30° to plus 220°.

USES: providing continuous watertight seals and expansion joints.

SPECS/FEATURES: neoprene strip is permanently bonded adhesively and mechanically to copper or other metal edgings. Impervious to ozone, oxygen, oils, grease and chemicals.
AIA file no. 12-H
MFR: LAMONT & RILEY CO.
Circle 274 for further information

Weight designated on metal rolls

MFR'S DESCRIPTION: *Cop-O-Top*, copper membrane flashing, is now imprinted with mark indicating weight of copper.

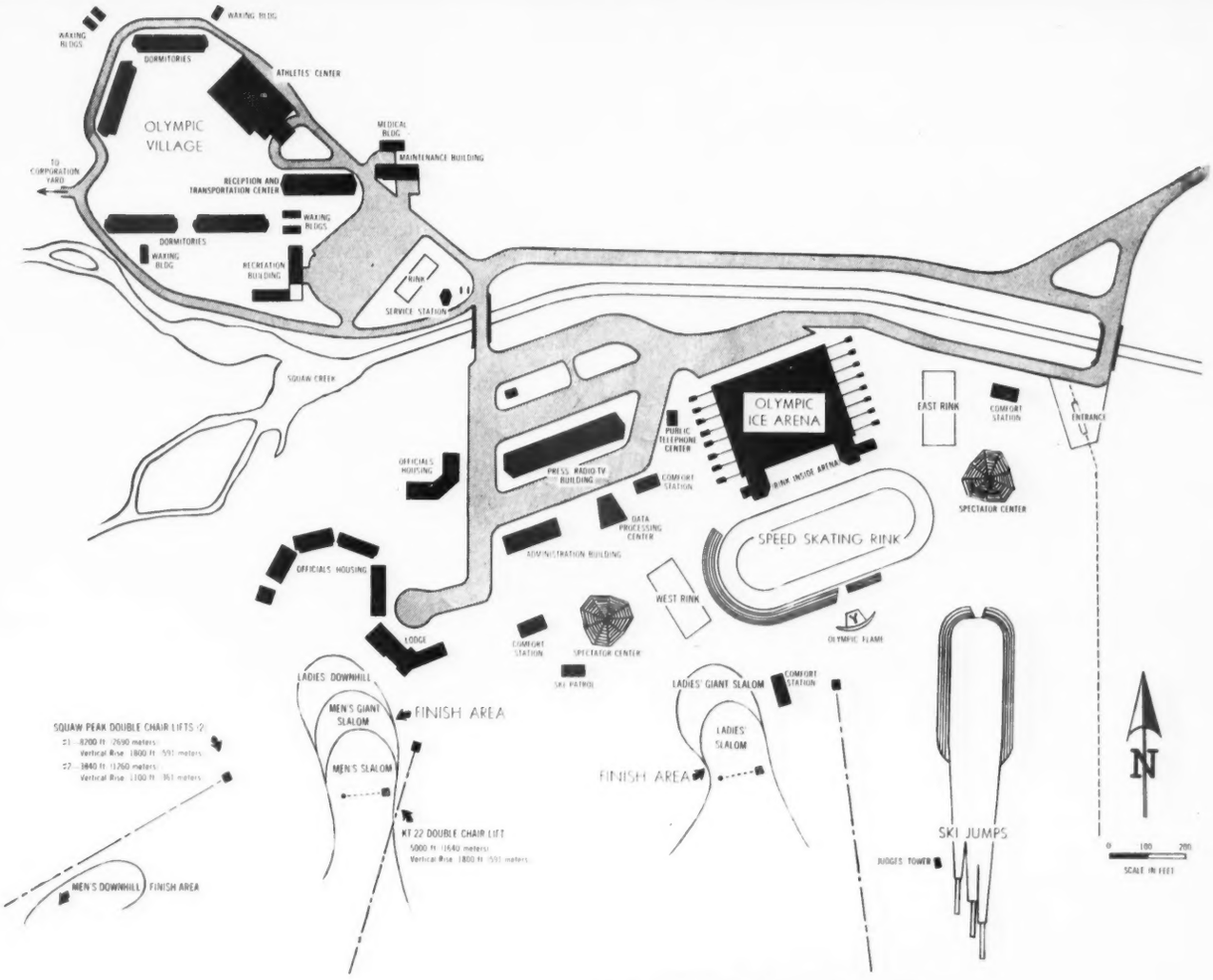
USES: metal content determination.

SPECS/FEATURES: markings appear diagonally across roll; Markings are on reinforced side.
AIA file no. 12-H
MFR: CHASE BRASS & COPPER CO.
Circle 275 for further information

THE ANATOMY OF A NEW PROJECT

preview: 11

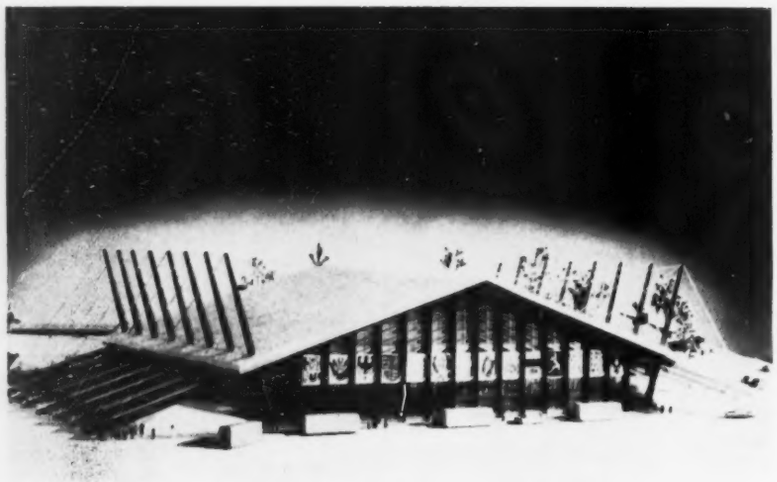
OLYMPIC ESTABLISHMENT, SQUAW VALLEY, LAKE TAHOE, CALIF. — *project*
ORGANIZING COMMITTEE, VIII OLYMPIC WINTER GAMES — *client*
CORLETT AND SPACKMAN, AIA, KITCHEN AND HUNT, AIA, SAN FRANCISCO — *architects*
SIX FIRMS AS GIVEN BELOW — *structural, mechanical, electrical engineers*



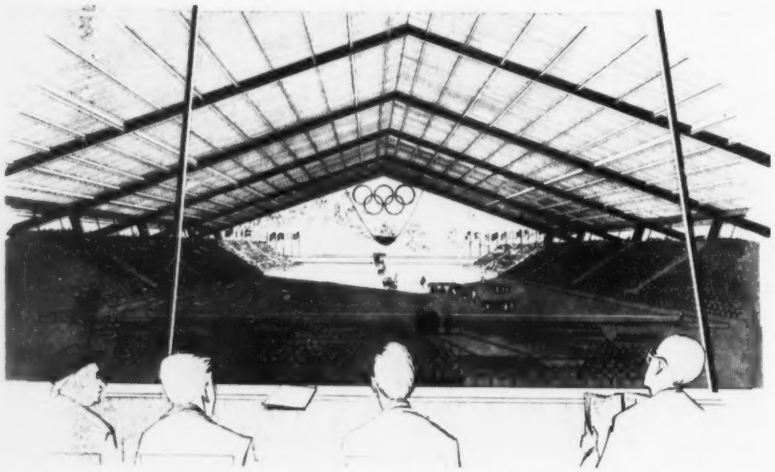
1960 Winter Olympic Games at Squaw Valley

When the International Olympic Committee chose Squaw Valley in California as the site of the VIII Olympic Winter Games, it marked the first time that a comparatively unknown, recently developed ski area was awarded the Games. It was also a departure from the usual practice of presenting the games to a city.

At Squaw Valley, unlike previous Olympic sites, the housing, stadiums, dining halls—everything required for the competitions—had to be designed and especially built for the Games. *(Continued on page 26)*



Architects' model of enclosed entrance to 9,000-seat, covered Olympic arena.



Interior view of arena shows skating rinks in foreground; ski jump in background.

The International Olympic Committee had good reasons for choosing Squaw Valley which lies just east of the ridge of California's Sierra Nevada mountain range. While it lacked man-made facilities, the Valley was generously endowed by nature with a dependable, heavy snowfall, a good winter climate and a wide variety of outstanding skiing terrain—all within a relatively compact area.

Architects and consultants

Architects in charge of the design of the Olympic facilities are Corlett and Spackman, AIA, and Kitchen and Hunt, AIA, of San Francisco, working with six firms of consulting engineers. The consulting engineers are H. J. Brunnier, structural engineer; John M. Sardis, structural engineer; Punnet, Parez and Hutchison, civil engineers; Office of Clyde Kennedy, sanitary engineers; Vandament and Darmsted, mechanical and electrical engineers; and Arthur C. Jenkins, transportation and traffic engineer.

Facilities for athletes and spectators

OLYMPIC ICE ARENA

The Olympic Games area is concentrated at the foot of the mountains at the western end of Squaw Valley. As one enters the Valley on the new, wide paved road, the imposing Ice Arena, designed by architects Corlett and Spackman-Kitchen and Hunt, will be the setting for the opening and closing ceremonies, figure skating and ice hockey events.

The Arena incorporates suspension cables to support the roof and thus has no interior supports to obstruct vision. In addition, the stands on the south side are designed to swing outward so the Arena can be opened for the opening and closing ceremonies.

This building was awarded first prize over 600 other entries in a nationwide design competition in 1958. It is designed for permanent use after the Games as a year-round ice skating and hockey rink which can also be quickly and easily converted to house conventions, shows and similar events.

The entrance to the Arena is through the lobby which extends the full length of the north side. Panels in the lobby and on the exterior of the north side will show decorative crests and seals of the participating nations. To contrast with the snow white setting, the interior and exterior of the building will be decorated with golden yellow, spruce green, Indian-red and black. The deeply corrugated surface of the steel roof deck will be covered with gray-green plastic and an over-all Indian motif will recall the past history of Squaw Valley.

The Arena's cable-supported roof has a clear span of 300 feet and slopes to a height of 90 feet at the ridge. Sixteen tapered and sloping columns constructed of steel plates rise to a height of 90 feet above the ground. Steel bridge cables are strung from each side of the roof to the tops of these columns. On one side they support the roof and on the other they are held by massive concrete anchor piers. The cables are 2¼ inches in diameter and each is capable of supporting 62 kips.

The roof has a flexible connection at the ridge, which permits the whole roof structure to move up and down as much as 22 inches as the snow load and temperature changes cause the supporting cables to expand and contract.

The steel roof deck consists of a series of continuous cells extending from eave to ridge. The heat, which is produced in the process of freezing the ice surfaces, is forced through these cells, melting the snow to lighten the roof load, and also helping control condensation.

The north wall of the Arena is enclosed with a glass set between steel supports. Retaining walls 32 feet high enclose the east and west sides and the south side will be open to the warming south sun for the opening and closing ceremonies. At other times, the bleachers at the south end will be closed inward, leaving only the area above the bleachers to the roof open.

The hockey and figure skating rink in the Arena is flanked on three enclosed sides by permanent seating, augmented by movable bleachers on the south side. These seats will be parallel to the rink for skating events and perpendicular to the rink and in line with the permanent seating at the ends of the rink for the opening and closing ceremonies.

The ridge of the roof is perpendicular to the long axis of the rink permitting the maximum rise and number of choice seats parallel to the rink and facing the open vista of the valley, the ski jumps and the speed skating oval beyond. It also provides press, radio and television facilities with an unobstructed view.

By utilizing the heat produced in the freezing process, warm air supplied through ducts under the seats will maintain a comfortable warmth for the spectators, press and officials in the Arena. This heat will also be used to lighten the roof load by melting the snow. Further uses of this heat will be to melt the snow after it has slid off the roof, expediting run-off into Squaw Creek; for general heating of the lobby, locker rooms and offices and to provide hot water.

OLYMPIC VILLAGE

Just a short walk to the west of the Arena is the Olympic Village, designed and built especially for the athletes. Here, in an arena which will be closed to the general public, the athletes and team officials will live in the four, three-story dormitories. Conveniently located within the Village is the large Athlete's Center Building with its huge dining room capable of accommodating all residents at one sitting. This building will also be the social center for the athletes, with comfortable lounging areas and a large-scale fireplace to provide an appropriate atmosphere for relaxation. The dining room will also be used for entertaining larger gatherings after the evening meals. Near the athlete's center is an athlete's recreation building which will house two motion picture rooms, a soda fountain, soft drink bar, dancing area and lounge area.

Other Village facilities include a hospital, maintenance building, six ski waxing buildings, a practice rink and a reception and transportation center. Sauna baths for the athletes are in each of the four dormitories.

Other facilities in the valley

PRESS FACILITIES

In addition to the complete press accommodations in the Arena, a large Press-Radio-TV building will be the center of all media coverage of the Games. This building is 328 feet long and 66 feet wide and has working space, wire communication offices, lounges, and offices for the press information services. Teletype circuits will feed results and information from and to all sports venues, the press building and press housing area.

ADMINISTRATION BUILDING

A two-story building of offices for the International Olympic Committee, all the International Federations and organizing committee personnel will be provided.

SPECTATOR CENTERS

Conveniently located within the competition area are two large spectator centers of contemporary design. Each makes use of large expanses of glass to provide sweeping views of the nearby rinks, slopes and jumping hills. These two, nine-sided buildings will contain lounges, first aid, rest rooms, restaurant and bar and souvenir shop facliities.

UTILITIES

In the construction of a "city" the size of the Olympic area, provision is being made for a complete utility system at Squaw Valley, including complete water supply, a sewage plant, flood control, fire protection, complete telephone and electrical power facilities and rest room facilities for the Games. Power supply will be standard U.S. 110 volt, 60 cycle, AC.

DATA PROCESSING CENTER

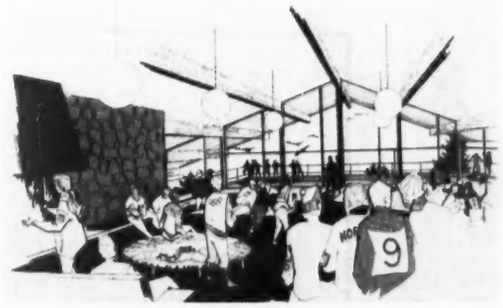
In this building, electric computers will provide automatic calculation of scores and automatic compilations of competitors' ratings.

OTHER FACILITIES

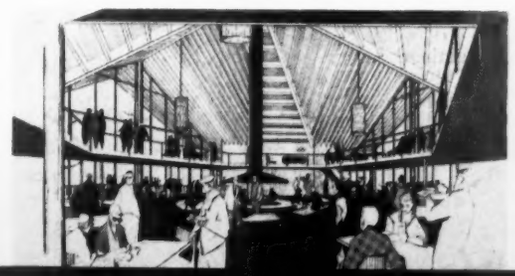
Some of the other facilities are four double chair lifts, a Pomagalski lift, an aerial tramway, several rope tows, warming shelter, public toilet buildings, maintenance building, ski patrol headquarters and a wide variety of equipment and service buildings. Also medical facilities will be provided in a field hospital, a pharmacy and central supply, five first-aid stations and four training rooms. In all, approximately 100 doctors, nurses and other medical personnel will be involved in the Olympic medical program.

SKI STADIUM

The Ski Stadium will be rectangular in shape, 250 meters long, with an over-all width of approximately 45 meters; the inside width of the actual start area being approximately 34 meters. It will consist of the Timing Building where hand, electric and interval timing will take place. It will include radio communications, a jury room, and a room for the duplicating of results. Stands will accommodate 1,000 spectators with additional space for several hundred more. The press-radio-TV facility here will be provided in a building 20 by 48 feet.



Aerial view of Olympic facilities (top) shows Athletes' Village in lower right corner. Drawing (top center) represents interior of athletes' lounge and dining hall. Spectators' lounge and dining center are seen from exterior (above) and interior (below).



abstracts

Government/the building arts

From a talk by Morris Ketchum, Jr., FAIA, of Ketchum and Sharp, President of The Architectural League of New York, at the first preliminary exhibition: "Business, Industry and Government" of the 1960 National Gold Medal Exhibition of the Building Arts, September 24, 1959.

"Federal architecture in Washington and elsewhere in this country is usually forced to follow outworn bureaucratic design formulas still popular with the amateur architects of Capitol Hill. The results are insulting to those great architects of the past, including Jefferson, Latrobe and Mills, responsible for the classic revival of the early days of our republic. As symbols of today's democracy, these empty spirited shells, whose facades more closely resemble those of Hitler's Chancellory or Stalin's wedding-cake classic monuments than the older architecture of Washington, are far from successful.

"Two years ago, at the Centennial Convention of the American Institute of Architects in Washington, Henry R. Luce said:

'What the founding fathers said and what years later Jacksonian Democracy said was this: We will have a government of free men, we will even have a democracy, and we will prove that a democracy does not have to slide into chaos and tyranny. We will prove that you can have a democratic government which will be both honorable and honored. We will prove that a nation of free men can be dignified, maintaining self-respect at home and respect throughout the world.

'That is what our forefathers said long years ago: They said it partly as fact, partly as bold aspiration. They said it symbolically. Today, America has the same thing to say—in greater fact and in greater aspiration. We, too, must say it symbolically. And we have more to say, new things to say—the determination to build a great civilization. We must say the old and the new in new language—you own language, the architectural language of the 20th century. We are already doing it. Witness the American embassy buildings. Some of them are triumphs of modern architecture. They are also great acts of statesmanship. The Department of State deserves, I think, an award from this Institute not only for the buildings themselves but for the magnificent directive under which they are being built. The Department of State has written a Magna Carta of fresh, imaginative architecture—an architecture of symbolism symbolizing the dignity of this republic and its profound concern for all mankind.

'What we have done abroad we must do at home. We must do it here in Washington and down to every county courthouse and post office. . . .'

"That same year, The League and Time, Inc., jointly sponsored an exhibition at The League—'The Architecture of Diplomacy'—which included more than 40 State Department projects located around the globe. At the opening, my predecessor as President of The League, Olindo Grossi, awarded this citation to William P. Hughes, Director of the Office of Foreign Buildings:

'The Department of State has entrusted to its Office of Foreign Buildings the planning and building of United States Embassy and Consular Buildings throughout the world.

'This office has with hope and understanding put the full weight of its conviction behind the idea that architecture representative of our country and of our era, which in turn will be complimentary to the countries where it shall stand, is an objective worthy of its strongest efforts.

'With faith in free enterprises it has called upon the architectural profession for counsel and it has seen fit to award to free architects, not bureaus, the design of these bulidings. . . .

"Back home, the Senate is smarting under severe public criticism of its new Senate Office Building, recently completed at an expenditure of 30 million dollars—10 million more than the original budget. Its cost of $714,285.00 per resident senator would be more justified if the new S.O.B., as the newspapers affectionately call it, were a better building.

"According to *The Reader's Digest:*

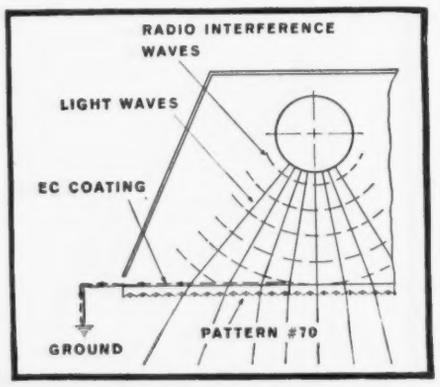
'The tenants squawked about asthmatic clocks that quivered and stopped at a quarter to the hour because of hands too heavy for the motors; complained about mail chutes with suction so powerful they threatened to snatch the hand along with the letter. Louvered doors, they said wafted state secrets into the corridors; and basement-garage entrances were so constructed that some statesmen's limousines sustained abrasions while trying to slither in. *It's a dandy building,* one senator said. *The only trouble is that nothing works.*'

"Even worse, its pasted-on classical facades are not even good governmental symbolism. They have drawn the fire of the architectural press. *The Forum,* for example, has called it a building that is 'saying nothing and going nowhere.'

"All this criticism has aroused Congressional resentment and punitive action, particularly in the House. There, according to *The Reader's Digest,* 'approval of the new Senate Office Building is general among members. These congressmen have a space problem of their own and would like the Senate to look benevolently on their own efforts to solve it. Their solution is a gigantic house office building now under construction on the Hill. It will provide suites for 170 congressmen at a cost of 65 million dollars—providing that no unforeseen difficulties arise between now and early 1963.'

"It would not seem to be coincidental that a subcommittee of the House Committee on Foreign Affairs is now busily attacking the State Department's program abroad which, in sharp contrast, has produced good architecture at reasonable cost.

(*Continued on page 36*)



Stop fluorescent static with new E-C pattern #70

You can ground radiated radio interference from hot fluorescent lamps with this new PYREX® E-C #70 panel.

It has an electroconductive coating that picks up all waves in the 0.018 to 25 megacycle range.

The panel transmits 70% to 78% of the open troffer illumination, controlling its brightness uniformly.

Makes for a perfect fixture wherever electronic apparatus of any kind is used: hospitals, research laboratories, radio stations, and radio stores.

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Circle 115 for further information

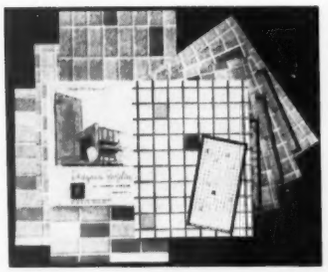
literature

Literature cited in this department is available from various manufacturers and associations free of charge. To obtain copies, circle the keyed numbers on the reader service cards facing pages 8 and 32.

Ceramic tile

Second *Designer's Portfolio* of full-scale ceramic mosaic designs, featuring exterior patterns, is available. Full-color photographs said to eliminate need for actual samples. Specifications and tile descriptions are included in folder.
AIA file no. 23-A

MFR: UNITED STATES CERAMIC TILE CO.
Circle 276

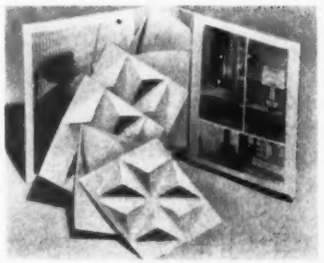


276

Tile photographs

Packet of *Photo Tiles* is available as supplement to actual tile samples. Nearly two dozen designs are reproduced in photographs, in color and actual size.
AIA file no. 23

MFR: POMONA TILE MFG. CO.
Circle 277

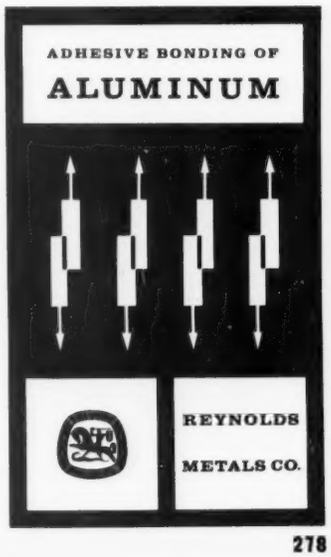


277

Aluminum bonding

Adhesive bonding of aluminum is subject of current booklet. Advantages of adhesive bonding in such applications as sandwich panels with honeycomb aluminum cores and beaded aluminum panels are cited. Information is confined mainly to structural adhesives. (20 pp.)
AIA file no. 15-J

MFR: REYNOLDS METALS CO.
Circle 278



278

Open web framing manual

Design information on *Allspan* open-web structural steel framing members is available in recent manual. Manual contains abundant, comprehensive tables of dimensions, properties and allowable loads, in addition to general construction details. Recommended bridging is detailed, as are methods of combining the units with trusses and steel decking. (28 pp.)
AIA file no. 13-H

MFR: MACOMBER, INC.
Circle 279

PLASTICS

Surface material

Seeded Emeri-Epox, skid-proof, slip-proof surfacing application, utilizing emery aggregate and epoxy resin, is described in recent bulletin. Instructions are provided for mixing and applying to indoor and outdoor surfaces of asphalt, concrete, wood, steel, tile, stone or brick. Package sizes available and estimating data are given. (2 pp.)
AIA file no. 3-B-1

MFR: WALTER MAGUIRE CO., INC.
Circle 280

Plastic cement finish

Current brochure describes *Mollistone*, plastic cement, trowel applied finish, for exterior stairs, roofs, pools, etc. Instructions, applications, features and specifications are included. (4 pp.)
AIA file no. 23-D

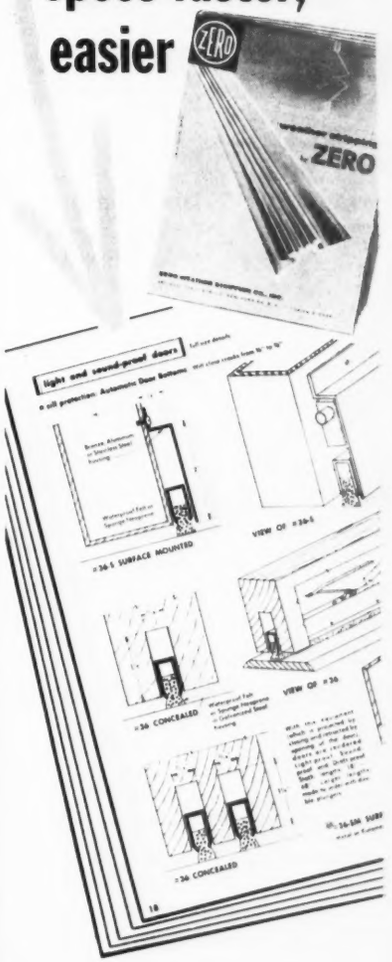
MFR: LANCASTER CHEMICAL CORP.
Circle 281

OFFICE AIDS

Instrumentation booklet

Ametron Electronic Scale Instrumentation is now available to aid in the design of weighing systems. Booklet explains flexibility of components in various combinations, to detect, record and indicate direct physical quantities, as well as perform automatic control functions and transmit information long distances. Also contained is instrumentation chart showing various combinations of transducers, applica-

how to write your weatherstripping specs faster, easier



Send today for your copy of Zero's new 28-page catalog. Design and installation detail illustrations are drawn FULL-SIZE for easier visualization and incorporation directly into your plans with a minimum of scaling. Also contains important application data and many useful suggestions for writing weatherstripping specifications.

Weather stripping for:
- doors • windows
- saddles
- lightproofing
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Circle 116 for further information

literature

tions, basic instruments and accessories. (8 pp.)
AIA file no. 35-i-3

MFR: STREETER-AMET CO.
Circle 282

Letters/symbols

Current brochure shows application photographs, dimensions and materials for line of liturgical tablets, metal letters, symbols and sculptured modulants. Specifications included. (8 pp.)
AIA file no. 15-R

MFR: ARMENTO METAL ARTS CO.
Circle 283

Drafting pens

Descriptive brochure treating features of *Marathon Long Line* and *Wide Line* ruling pens is now available. Mfr states pens draw from 5 to 8 times more inches of line per filling. (6 pp.)
AIA file no. 35-H-3

MFR: KEUFFEL & ESSER CO.
Circle 284

Optical equipment

Optical Tooling and Industrial Alignment Equipment is catalog covering line of equipment for production tooling, machine alignment, quality control and inspection. Technical descriptions and specifications are provided. Equipment shown includes jig transits, alignment telescopes, collimators, sight levels and line of sight telescopes. (25 pp.)
AIA file no. 35-i

MFR: KEUFFEL & ESSER CO.
Circle 285

An Economical New Fastening System For Asbestos Sheets

The economical new Townsend Tuff Tite fastening system for asbestos produces waterproof joints without expensive, time-consuming caulking, whether you prefer tapping screws or bolts. Weather-proofing and vibration resistance are provided by the conical neoprene washer, which completely fills the hole. Fastener and neoprene washer arrive on the job pre-assembled and ready to install.

If you are fastening corrugated asbestos or sandwich board, you can effect important economies with Townsend Tuff Tites. Write for full information. Townsend Company, Engineered Fasteners Division, Box 71-V, Ellwood City, Pa.

Circle 117 for further information

Shelf filing

Illustrated folder describes how divider type shelf filing saves space without sacrificing efficiency. System said to be practicable for offices of insurance companies, hospitals, manufacturers and retail and wholesale businesses. (6 pp.)
AIA file no. 35-H-4.

MFR: REMINGTON RAND DIV., SPERRY RAND CORP.
Circle 286

Interchangeable type

Recent booklet provides details of interchangeable type, to enable typing of special symbols and equations needed in field of engineering, by electric typewriter. Method stated to be adaptable for ordinary purposes, in addition to specialized requirements. Engineering symbols illustrated. (12 pp.)
AIA file no. 35-H-4

MFR: REMINGTON RAND DIV., SPERRY RAND CORP.
Circle 287

Printing calculator

Model *99* printing calculator is subject of recent folder. Calculator reportedly eliminates time-consuming second runs for verification. Features include improved keyboard design and automatic internal controls. (6 pp.)
AIA file no. 35-H-4

MFR: REMINGTON RAND DIV., SPERRY RAND CORP.
Circle 288

CONSTRUCTION

Air entrainment meter

Bulletin describing precision type of air entrainment meter, used in testing and designing concrete mixes, has been released. Operating instructions, information on maintenance and recalibration of unit are included. (6 pp.)
AIA file no. 4-A-1

MFR: SOILTEST, INC.
Circle 289

Construction systems

Booklets on construction systems, available to architects, are: *Membrane Fireproofing; The Trussteel Stud Partition System; The Two-inch Solid Lath and Plaster Partition System;* and *The Brace-tite Lathing System for Suspended Ceilings.* Booklets show in detailed photographs and drawings how each system functions to provide better designed buildings. (8, 12, 12 and 8 pp.)
AIA file no. 21-A-2

MFR: UNITED STATES GYPSUM CO.
Circle 290

Welding wire guide

Revised booklet on welding wire includes information on line of gas-shielded metal-arc welding wires, including data on improved A675 Steel wire, A666 Steel and A556 Aluminum. Guide provides information concerning steel, aluminum, copper and copper base, stainless steel, titanium and special welding wires. Chemical composition, mechanical properties, operating procedures, wire diameters and packaging data are included. (84 pp.)
AIA file no. 31-M

MFR: AIR REDUCTION SALES CO.
Circle 291

SOUND CONTROL

Acoustical ceiling tile

Recent booklet describes fire protective acoustical ceiling tile as economic measure in non-residential construction where rated fire protection is required. *Acoustical Fire Guard* has one, two and four-hour time design rating by UL. (12 pp.)
AIA file no. 39-B

MFR: ARMSTRONG CORK CO.
Circle 292

Acoustical units

Current catalog lists line of acoustical products, including ceiling tiles, aluminum systems, soundproof doors and silencers for air-conditioning and ventilating systems. Product descriptions, photographs and test data are contained. (12 pp.)
AIA file no. 39-B

MFR: ELOF HANSSON, INC., ACOUSTICAL DIV.
Circle 293

WALL/FLOOR TILES

Tile specifications

Interim Federal Specification for Vinyl Asbestos Floor Tile, L-T-00345, has been released, superseding *Interim Federal Specification for Vinyl Plastic Floor Tile, L-T-751, for Type I Semi-Flexible Tile,* issued in 1952. Specification is for ⅛" tile only, and covers requirements for size, thickness, indentation, dimensional stabil-

ity, flexibility, resistance to reagents and curl. Similar specification includes requirements for thinner gauge of tile.
AIA file no. 23-G

ASSN: STANDARDIZATION DIV., GENERAL SERVICES ADMINISTRATION; ASPHALT AND VINYL ASBESTOS TILE INST.
Circle 294

Conductive tile

Electrically conductive floor tile is subject of *Conductive Tile Factbook.* Included are 3 folders treating hospital installation, case studies and specifications.
AIA file no. 23-A

MFR: THE MOSAIC TILE CO.
Circle 295

Restaurant floor coverings

Literature is available on various types of floor coverings for restaurants. Brochure contains description of units for providing safety, comfort, reduction in breakage and sanitation. Items for kitchen, serving area and entrance are included. (4 pp.)
AIA file no. 28-E

MFR: D. W. MOOR CO.
Circle 296

Mosaic tile patterns

Mosaic Medley Patterns provides description of random mixture ceramic mosaic tile patterns. Color reproductions of interior and exterior installations, residential and commercial, are included. Specifications are given for 3 types of mosaics. (12 pp.)
AIA file no. 23-A

MFR: THE MOSAIC TILE CO.
Circle 297

Specifications guide

Architectural specifications guide is offered, covering line of resilient floor tile. Revised edition contains data on subfloor preparation, installation, cleaning and waxing and other technical data. (22 pp.)
AIA file no. 23-D

MFR: AZROCK PRODUCTS DIV., UVALDE ROCK ASPHALT CO.
Circle 298

Tile standard revision

Revised *Appendix* to *Commercial Standard 168-50* is available. Principal changes deal with proper wall tile preparation and types of trowels to be used in the application of the mastic. (3 pp.)
AIA file no. 23-G

ASSN: POLYSTYRENE WALL TILE DIV., THE SOCIETY OF THE PLASTICS INDUSTRY, INC.
Circle 299

Floor tiles

Folder is offered, showing range of *Vina-Lux,* asbestos floor tiles, styles and patterns. *Carpet Tones* and *Wood Tones* are most recent of 7 patterns. (6 pp.)
AIA file no. 23

MFR: AZROCK PRODUCTS DIV., UVALDE ROCK ASPHALT CO.
Circle 1

PORCELAIN ENAMEL

Porcelain enamel panels

Current bulletin describes *Sculpturama,* porcelain enamel on steel panels, available in 1 or 2 colors, in semimatte finish. Numerous design possibilities are shown. (4 pp.)
AIA file no. 15-M-1

MFR: DAVIDSON ENAMEL PRODUCTS, INC., SUBS. FENESTRA, INC.
Circle 2

Porcelain enamel colors

Color Guide for Architectural Porcelain Enamel is compilation of 47 industry-wide colors for porcelain enamel surfaces. Variations are possible in variety of textures and finishes. Folder is intended for architects and other specifiers of porcelain enamel. (4 pp.)
AIA file no. 15-M-1

ASSN: ARCHITECTURAL DIV., PORCELAIN ENAMEL INST.
Circle 3

INSULATION

Roof deck insulation

Insulation For Modern Roof Decks discusses economics and advantages of effective insulation in roof deck construction. Also contained is design and performance data on roof deck systems. (32 pp.)
AIA file no. 37-B-2

MFR: THE CELOTEX CORP.
Circle 4

Reflective insulation

Current pamphlet provides data on reflective insulation, said to minimize installation time in construction. Illustrations show proper installation of reflective insulation to provide thermal efficiency and a protective vapor barrier.
AIA file no. 37

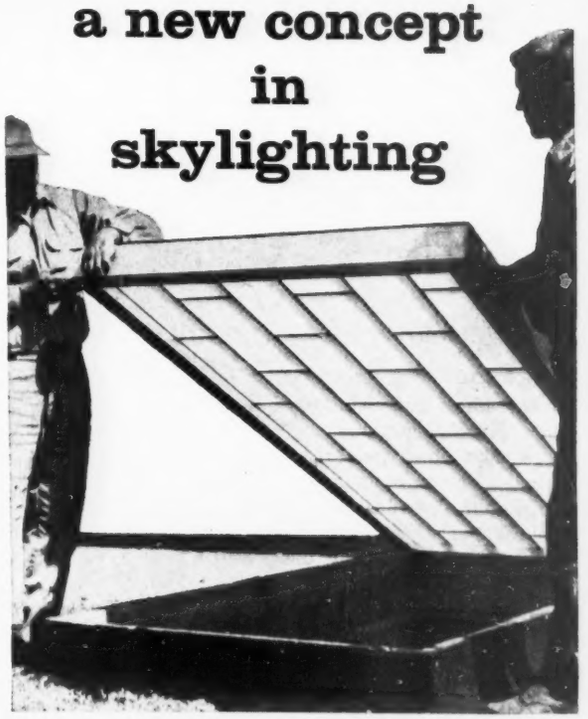
MFR: REFLECTAL CORP.
Circle 5

Industrial insulation

Topical brochure lists types of industrial insulations and insulating cements for use in power, chemical, petroleum, petrochemical and manufacturing industries. Tabular selec-

from Kalwall Corporation

a new concept in skylighting



It took two men just five minutes to install this 4' x 8' translucent Kalwall Skylight at the new Junior High School, Lexington, Mass. Architect: Charles H. Cole 2nd, Lexington, Mass.; Roofing Contractor: Paramount Cornice Corp., Pawt., R. I.

Prefabricated skylight units that completely eliminate "hot spots" — they're now available from Kalwall Corporation.

Kalwall Skylights are manufactured with the structural Kalwall Translucent Panel sealed into an aluminum skylight frame. Sandwich panel construction gives amazing strength — yet the skylights are so light that workmen may easily install the largest unit in a matter of minutes.

Kalwall's translucent qualities are even more remarkable. On a bright day, the fiberglass plastic faces diffuse direct sunlight into even, glare-free illumination — without hot spots. On dark days, the volume of light is actually increased through double-diffusion of incident light. Panels have an average U-factor of 0.40 — are weatherproof and shatter-resistant.

From single-panel skylight units to entire Kalwall Translucent Roofs — Kalwall Skylighting brightens the interior of your buildings in the most practical, most efficient way. Send today for complete details!

KALWALL
TRANSLUCENT
STRUCTURAL PANELS

Kalwall Corporation
Dept. AE, Union Street, Manchester, N. H.

Please send complete information on ☐ Kalwall Skylights ☐ Kalwall Panels ☐ Kalwall Panel Unit Wall

Name.....

Address.....

City.....State.....

Circle 118 for further information

literature

tion guide indicates applications for high temperature and superheated surfaces, high, medium and low pressure steam lines, cold water pipes, heating and air-conditioning ducts and breechings. (4 pp.)
AIA file no. 37

MFR: PHILIP CAREY MFG. CO.
Circle 6

HARDWARE

Hinge guide

Revised hinge guide contains selective guide for determining proper hinge for known conditions, requirements for selection of proper hinge specification, application drawings, sizes and finishes. Features are a pivot reinforced hinge for exterior doors and a paumelle hinge. (12 pp.)
AIA file no. 27-B

MFR: STANLEY HARDWARE DIV., THE STANLEY WORKS
Circle 7

Hospital hardware

Folder on hospital hardware is available, containing photographs and descriptions of hinges, roller door holders and latches, designed for hospital requirements. Ball bearing hinges, designed to swing doors completely clear of opening when opened to 90°, are featured. (4 pp.)
AIA file no. 27-B

MFR: STANLEY HARDWARE DIV., THE STANLEY WORKS
Circle 8

MISCELLANY

Planning guide

Catalog and planning guide for domestic science, home economics classrooms, food laboratories and sewing rooms is offered. Included are illustrations and elevation drawings of cabinets, construction features, specifications, classroom layouts and installation photographs. (18 pp.)
AIA file no. 35-C-12

MFR: SCHOOL ROOM CABINET DIV., THE KITCHEN MAID CORP.
Circle 9

Water control systems

Illustrated brochure presents recently introduced *Filtrion Automatic Side-Stream Boiler Water Control* systems for steam boilers. Features, installation photographs, flow diagram, analysis tables, specifications, dimensions, capacities, controls, guarantee and warranty information are included. (6 pp.)
AIA file no. 34-B-1

MFR: SPARKLER-FILTRION CORP.
Circle 10

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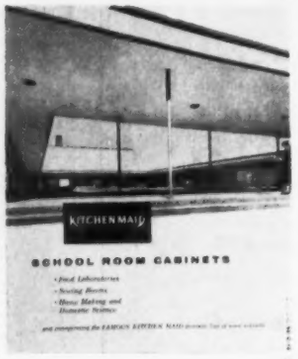

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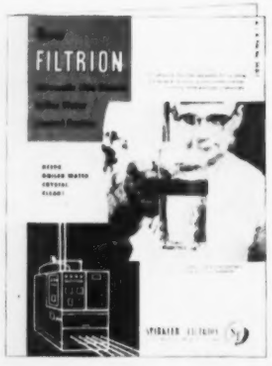

10

16

17

Aluminum windows

Bulletin 6040 describes *Series 900-A*, aluminum awning windows, for residential construction. Features include heavy operating mechanisms, concealed hardware, complete weatherstripping and positive locking vents. Descriptions and listings of types and sizes are included. (4 pp.)
AIA file no. 16-E

MFR: CECO STEEL PRODUCTS CORP.
Circle 11

Crane trolley system

Penrose trolley system which covers all live parts and is stated to eliminate hazards of exposed crane trolley wires, is subject of recent booklet. Installation is accomplished by clipping the neoprene duct to the trolley wire. Mfr states plant shut-down is unnecessary. (6 pp.)
AIA file no. 35-i-121

MFR: NORTHBROOK PRODUCTS, INC.
Circle 12

Shock/vibration control

Comprehensive technical manual is offered, to assist engineers in solving objectionable vibration and shock conditions with *Sorbtex*, preformed fabric neoprene and rubber pad materials. Manual contains reference chart and other material developed by laboratory tests. Limited number is available. (40 pp.)
AIA file no. 24

MFR: VOSS ENGINEERING, INC.
Circle 13

Chair catalog

Illustrated catalog describes steel office chair models. Featured are posture chairs, both spring-back and rigid-back types. Also contained are side chairs and arm chairs. (20 pp.)
AIA file no. 35-H-4

MFR: REMINGTON RAND DIV., SPERRY RAND CORP.
Circle 14

HVAC

Industrial fans

Fundamental data relating to capacities and construction of line of industrial fans is presented in current bulletin. Included are complete rating tables, giving volumes of delivered air, rpm, horsepower at various static pressures and outlet velocity and velocity pressures. Correction ratios and fan performance curves are included in comprehensive presentation. (28 pp.)
AIA file no. 30-D-1

MFR: LEHIGH FAN & BLOWER DIV., FULLER CO.
Circle 15

Radiant heaters

Line of baseboard, wall panel and ceiling-recessed electric radiant heaters is discussed in catalog now available. Technical and descriptive information on uses and operation of units, as well as specifications are presented.
AIA file no. 30-C-44

MFR: BERKO ELECTRIC MFG. CORP.
Circle 16

Baseboard heating

Current design handbook covers aspects of zone control hot water baseboard heating for residences. Includes sections on construction, installation, dimensions, specifications, features, photographs and air conditioning. (70 pp.)
AIA file no. 30-C-44

MFR: EDWARDS ENGINEERING CORP.
Circle 17

Air compressor manual

Service manual on air compressors and spray equipment for 1959-60, contains parts lists, general information on installation, operation and maintenance and allied service information. Price is $2.50; $2.80 on the West Coast. (400 pp.)
AIA file no. 35-i-4

MFR: THE DEVILBISS CO.
Circle 18

Mechanical dust collectors

Technical bulletin cites improvements in mechanical dust collectors, including an involute design. Detailed drawings and application diagrams for involute design are contained, with technical information on hopper discharge valve and larger diameter tubes for *Cyclo-trell* design. (28 pp.)
AIA file no. 35-J

MFR: RESEARCH-COTTRELL, INC.
Circle 19

Fan/hood combinations

Current catalog presents line of kitchen, bath and laundry ventilating equipment. *Coverange* fan and hood combinations, available in baked white enamel, coppertone and stainless steel finishes, are illustrated with specifications and dimension drawings. Models include impeller type blowers, propeller type fans, lights and matching

splash plates. (16 pp.)
AIA file no. 30-D-1
MFR: MIAMI CABINET DIV., THE PHILIP CAREY MFG. CO.
Circle 20

Generating sets

Line of diesel engine-driven electric generating sets is described and illustrated in recent folder. Specifications and illustrations are included for sets ranging in size from 3,000 to 6,000 watts (air-cooled) and from 10,000 to 230,000 watts (water-cooled). (4 pp.)
AIA file no. 31-A-2
MFR: D. W. ONAN & SONS, INC.
Circle 21

Ventilators

Performance and dimensional data, capacity tables and line drawings of units are presented in recent publication describing ventilators. *Fiber-Aire, Contouramic, Pyrojector* and *Heat Valve* units are pictured and described. (8 pp.)
AIA file no. 30-D
MFR: THE SWARTWOUT CO.
Circle 22

Elbow fans

Wingfoil elbow fans for ventilation, ovens, furnaces, dryers and kilns are described in recent bulletin. Tables of sizes and dimensions and capacity tables from 600 to 32,000 cfm are provided. (4 pp.)
AIA file no. 30-D-1
MFR: L. J. WING MFG. CO.
Circle 23

Fume hoods

Booklet is offered on fume hood selection. Among material covered: reasons for use of fume hoods; glossary of terms; lists of advantages and recommendations; approved test method; and operating and safety precautions. (16 pp.)
AIA file no. 35-E
MFR: KEWAUNEE MFG. CO.
Circle 24

Air diffuser

Bulletin K-44 describes *Kno-Draft KF*, fixed pattern diffuser, claimed suitable for use where no adjustment of air discharge is necessary. Construction and performance features, mounting directions, illustrations, dimensional diagrams, sizes and capacities are included.
AIA file no. 30-J
MFR: CONNOR ENGINEERING CORP.
Circle 25

Furnace control unit

Multi-Circuit Auto-Transformer, an adjustable voltage system to provide independent control of each heating element in silicon carbide electric furnaces and kilns, is featured in current bulletin. Simplified furnace design and wiring, uniform control and zoneheating control are emphasized. (4 pp.)
AIA file no. 31-B-6
MFR: ARIEL DAVIS MFG. CO.
Circle 26

ALARM SYSTEMS

Fire-resistant systems

Booklet, *Fire-Resistant Construction in Modern Steel-Framed Buildings*, is compilation of fire-resistant lightweight floor and roof systems, for use with steel construction, and their fire-resistance ratings. Included are sections on building codes with reference to general acceptance of performance tests, characteristics of dependable fireproofing materials, concept of "light-frame" steel construction and reference table. (44 pp.)
AIA file no. 17-A
ASSN: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.
Circle 27

Fire alarm systems

Line of fire alarm systems for schools, institutions, commercial and industrial buildings is featured in recent publication. Unit descriptions, illustrations and specifications are presented. (12 pp.)
AIA file no. 31-i-31
MFR: EDWARDS CO., INC.
Circle 28

MAINTENANCE

Masonry seals

Product descriptions, functions and applications are included in bulletin treating seals and gaskets for sealing control joints and cushioning stresses in masonry construction. Line drawings illustrate applications. (4 pp.)
AIA file no. 17-J
MFR: WILLIAMS EQUIPMENT AND SUPPLY CO., INC.
Circle 29

Corrosion control

Service brochure discusses corrosion of plant window facilities as a serious maintenance problem. Information is contained on alloy bonding of zinc to steel for corrosion protection, without necessity of painting. (4 pp.)
AIA file no. 16-E
MFR: FENESTRA, INC.
Circle 30

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editorial

THE SOLOMON R. GUGGENHEIM MUSEUM

A TEMPLE FOR THE ASCENT OF MAN: The new *Solomon R. Guggenheim Museum* designed by Frank Lloyd Wright opened its doors at noon, Wednesday, October 21, to thousands of eager New Yorkers who stood waiting in line for hours anticipating their share of the fun. This museum also opened in a maelstrom of newspaper controversy, in the glare of sensational radio and TV publicity, and in a fall-out flurry of expert and inexpert commentary.

Front page coverage appearing in *The New York Times* was given to a straight-forward news report and to an extensive and thoughful critique by its eminent art critic, John Canaday, who found the museum, "a Pyrrhic victory" for Frank Lloyd Wright because in Mr. Canaday's opinion, the museum "is a war between architecture and painting in which both come out badly maimed." In his comprehensive review, Mr. Canaday found that the museum's design defeated its function.

John Canaday is one of America's best informed, most scholarly and sophisticated art critics—but we earnestly feel that he missed a great experience and a good deal of the fun. We believe that this wonderful space created by one of the 20th century's great architects was a Promethean, life-giving act and contribution to the historical concept of a museum. Wright fully recognized the evolution of museums from the princely European estate with its salons, galleries and architectural conceits. The world-known examples of the Louvre, the Hermitage, the Prado, the Uffizi—all are essentially renovated and converted palaces given over to house art collections. The prestige enjoyed by these galleries has encouraged imitation, the world over, of museum buildings which are assiduous copies in architectural character, planning and spaces of these extant historical examples.

At last, Wright has vigorously freed the museum from its architectural enslavement and has restored the word "museum" to its classical meaning—'a temple of the Muses.' He has provided a *living experience* in art and spatial form for even the most uninitiated.

One enters a vast hall of tremendous scale, the core of which rises above the foyer level to a height of 92 feet articulating in an elegantly detailed frosted glass dome. Everyone is aware by now, that the viewer walks up a gently-graded ramp past niches in which the collection is mounted. The ascent up the space is a glowing experience, full of atmospheric change and mood contrast which provide moments of empathy and surprise. Paintings and sculpture may be seen at close-range, in perspective, or in several gallery tiers evocative of visual excitment—all these stimuli of form and color rendered to the beholder at once. People are dramatically silhouetted against the brilliantly-lit galleries (actually the work of Director Sweeney) giving a crisp interplay of life to the environment.

The collection, excellent as it is, seems curiously anti-climatic as one moves up the ramp. Perhaps the exhibition of a collection in a space such as this, should be planned, in its sequence, to unfold in the manner of a well-constructed play —so that as one progresses through the exhibits, there is *visual punctuation* to one's movement through the architectural space. A fitting climax could be delivered as one reaches the top—a *denouément*, if you will—a second-act "wallop" to generate a fulfillment of expectation for the viewer. We believe that the educational values of such an arrangement would be enhanced at no sacrifice whatsoever to academic and scholarly reputation.

George Bernard Shaw, another iconoclast of our time, considered the theater as a "temple for the ascent of man." In this spirit, Wright has willed us such a temple for contemplating the visual and textural word and work. One would not destroy a theater because it occasionally houses a flop. Often plays simply don't measure up to the scale and majesty of the institutions in which they are housed.

One could cite certain planning abuses—tortured little spaces into which telephone booths and water closets have been shoved without mercy. But were these factors ever of the Wrightean moment? In fact, has the Parthenon, St. Peter's or Chartres ever been measured as architecture by the size and disposition of its wc's?

Mention should be made of the delightful Mozartian-like auditorium pleasantly illuminated by inverted fan windows. This gem is to be found in a sub-grade level of the complex. A luxurious and expectant air is imparted to this space as if the curtain were about to rise upon a bright Restoration comedy.

The Guggenheim collection has always been considered unorthodox. Ironically, this time the collection itself has been "topped" by its own unorthodox building by an unorthodox architect.

In passing, may we suggest that often today's heresies may become tomorrow's accepted canons of taste. Wright has spoken in a clear and beautiful idiom—rich, bold and vibrant with life.

Accordingly, we are grateful to the Museum's Board of Trustees and to its Director James Johnson Sweeney for having given the people of the City of New York a magnificent architectural space which may come to be treasured and loved as one of the great buildings of our time. *JJC*

literature

lead-coumarone primer for seawater immersion have been published in *Red Lead Technical Letter No. 14*. Complete paint systems for ship hulls and fixed marine installations are also described. (4 pp.)
AIA file no. 25-B-33
ASSN: LEAD INDUSTRIES ASSN.
Circle 31

LIGHTING

Illumination report

Technical bulletin is available, providing results of company tests to determine illumination efficiency of *Circlgrid* vinyl louvers. Contained are reports on (1) correlation of illumination efficiency of *Circlgrid* vs. other diffusers, and (2) maximum brightness relative to tube brightness. (5 pp.)
AIA file no. 31-F-2
MFR: CIRVAC PLASTICS
Circle 32

Lighting folder

Current folder, listing line of school lighting fixtures, is now available. Intended to serve as reference guide for architects, engineers and other lighting specifiers, folder describes school fixtures stated to meet high level lighting standards. (4 pp.)
AIA file no. 31-F-23
MFR: SMITHCRAFT LIGHTING
Circle 33

Fixture catalog

Catalog for 1960 presents over 184 color photographs of surface mounted lighting fixtures, designed for residential installation. Catalog includes descriptions and suggestions for wall and ceiling fixtures in variety of finishes. (52 pp.)
AIA file no. 31-F-23
MFR: EMERSON-IMPERIAL DIV., EMERSON ELECTRIC MFG. CO.
Circle 34

ELECTRICAL EQUIPMENT

Circuit breaker bulletin

Bulletin describing line of industrial molded case circuit breaker accessories and modifications is now available. Publication provides necessary information for selecting, specifying and ordering units. Products are illustrated and text is supplemented by

literature

outline dimensional drawings. (12 pp.)
AIA file no. 31-D-4

MFR: CIRCUIT PROTECTIVE DEVICES DEPT., GENERAL ELECTRIC CO.
Circle 35

Safety switch catalog

Current literature illustrates line of light, standard and heavy duty safety switches. Information on specifications, dimensions, capacities, voltages and horsepower ratings is contained. (8 pp.)
AIA file no. 31-D-42

MFR: FRANK ADAM ELECTRIC CO.
Circle 36

PLUMBING/FITTINGS

Pipeline strainer

Bulletin 1210-1 describes recent addition to line of self-cleaning pipeline strainers in sizes from ¼" through 3". High strength construction, tapered screen socket and built-in sediment collection chamber are stressed. (2 pp.)
AIA file no. 29-C-8

MFR: SARCO CO., INC.
Circle 37

Bronze fittings

Recent catalog illustrates line of *Rapidseal* cast bronze, solder-joint pressure and drainage fittings. Dimensions and detail drawings are presented. Also available is wall chart, reference guide of bronze drainage fittings. (42 pp.)
AIA file no. 29-B-4

MFR: THE GRABLER MFG. CO.
Circle 38

Laboratory units

Illustrated catalog presents data on such chemistry laboratory equipment as laboratory tables, storage counters, apparatus and glassware of *Semimicro* line. Six floor plans chemistry-physics laboratories included. (24 pp.)
AIA file no. 35-E

MFR: KEWAUNEE MFG. CO.
Circle 39

Group showers

Multi-person type shower baths are described in recent literature. Details of basic shower column, in 3 heights, are given, along with installation and floor plan suggestions. (8 pp.)
AIA file no. 29-H

MFR: BRADLEY WASHFOUNTAIN CO.
Circle 40

a NEW luminaire...

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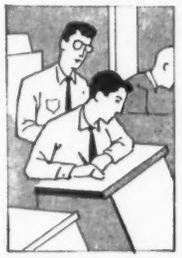

Yes, we went to the experts to find out exactly what design and operating features should be included in a luminaire specified for classrooms. The answers we got from this select group of architects and consulting engineers dictated the development of the Triumph—a rugged, easy-to-maintain, distinctively attractive innovation in lighting efficiency.

Prismatic Lens—New Approach to Light Distribution
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Serene Styling Blends with Architecture
Slim, trim simplicity and subdued sparkle harmonize with low-key surroundings.

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There are no dust-collecting flat areas, deep grooves or difficult corners in the Triumph's streamlined design. Curved lens repels debris. Air circulation cleanses interior. All surfaces are readily accessible. An occasional swish or two with a dustcloth keeps the Triumph looking spanking new.

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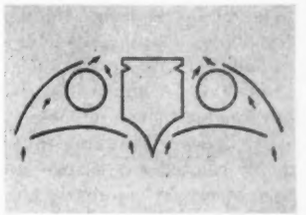
Available with Conventional Louvers
The new Triumph can also be supplied with metal louvers. For complete information, write Westinghouse Electric Corporation, Lighting Division, Edgewater Park, Cleveland, Ohio.



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names

This month, NAMES *profiles one of the architectural profession's younger men. We believe that our readers will be interested in knowing more about this architect who has achieved some measure of distinction in his career and who, by his spirit of service, will contribute to the ranks of tomorrow's professional leadership.*

David Todd, AIA/CSI

David Todd, partner in the architectural firm of Ballard, Todd and Snibbe, is a man who was exposed to his profession at an early age. Young Todd was oriented in an atmosphere of steel and technology. His father was a vice-president of the Armco Steel Corporation. The family lived in Middletown, Ohio, where in boyhood, Dave Todd was surrounded by factories, industrial sounds and the activity of heavy industry.

Todd attended Dartmouth College, following prep school at Exeter. His early interests at Dartmouth were in music and the theater. A trip to Europe in 1935 resulted in changing the course of his life. Visits to Europe's Gothic cathedrals had a profound effect on Todd and he was moved to enter into an intensive study of medieval history and art. After a course in Gothic architecture, Todd took other architectural courses of study, climaxed by a study of city planning and housing under Walter Curt Behrendt. This was during the late 30's when adequate housing was a great social challenge. As a result, Todd became engrossed in housing problems. He graduated from the School of Architecture at the University of Michigan in 1940 and after two years with various architectural firms, he joined the army.

His service in the Ordnance Department expanded his interest in the technical aspects of construction. In fact, in Korea and Japan, he made an intensive study of Japanese construction techniques and factory methods for the U.S. Army.

Upon his return to the U.S. in 1946, Todd joined the New York firm of Harrison, Ballard and Allen, specialists in housing and city planning. His work was a combination of planning and architecture. During this time, William Ballard maintained a separate architectural practice while participating in the H.B. and A. partnership, and Todd eventually was placed in charge of architectural activities of the combined firms. He became more and more identified with the technical aspects of this work, while maintaining a keen interest in its design implications. Upon dissolution of H.B. and A., Todd remained with Ballard as an associate.

He has taken an active part in the development of various housing projects and the firm's expanded practice in a variety of other building types. In 1957, the partnership of Ballard, Todd and Snibbe was formed. Todd is the practitioner and partner who determines material selection, methods of construction, engineering and specifications.

Because of the growing need for encouraging better specifications throughout the construction industry, David Todd has been keenly interested in the work and program of the Constructions Specifications Institute. He is not a believer in the "standard" specification but believes that it should be adapted to each particular project. Of great importance and a major problem, says Todd, is the development of methods of communication to provide a common basis of agreement on specification writing within the building industry.

He believes that only through an interchange of ideas, by people with commonly-related experience in construction specifications, will improvements take place. As the newly elected President of the New York Chapter of the *Construction Specifications Institute,* David Todd is energetically working for these objectives.

Last year he served as Chairman of the Office Practice Committee, *New York Chapter of AIA,* and is a member of the *Building Research Institute.* He still maintains the theatrical interests of his student days as a member of the *Amateur Comedy Club.* The Todds live in a converted brownstone on New York's upper East Side.

ABSTRACTS

(Continued from page 28)

"These amateur architectural critics, according to a news article to be published in [October's] *Forum,* have threatened to make no further funds available for this overseas building program unless it refrains from giving another commission to Eero Saarinen and unless it allows many more architects to have a chance at commissions, preferably by competition. To assure its 'control,' the subcommittee decided to approve only a two-year instead of a five-year extension of the program after its current authorization expires next year.

"The subcommittee was especially critical of Saarinen's London Embassy (won in a competition) and Johansen's Dublin design. As a result, Johansen's 'Celtic tower' has been killed and Director Hughes of F.B.O. has agreed to submit preliminary plans for all new projects to the subcommittee for architectural approval, in spite of the fact that one member of the subcommittee stated: 'Who am I to criticize? I do not classify myself as a qualified critic of either modern art or modern architecture.'

"The Senate Foreign Relations Committee, headed by Senator Fulbright, has an entirely different point of view from that of this House subcommittee. On September 2, 1959, it approved the request to the Congress by the Office of Foreign Buildings for 100 million dollars to continue its building program abroad for the next five years and the Senate passed the Bill. The Committee said: 'Some members of the Committee have seen the architectural plans and models for many of the structures which are to be built pursuant to this five-year plan. The Committee commends the State Department for the excellence of these plans.'

"Let us hope that the widespread opportunities offered, thus far, to 55 outstanding architectural firms to interpret governmental architecture abroad in new, exciting and appropriate terms will not come to an end through action by a Congressional minority. If that happens, the State Department's world-wide demonstration of the cultural maturity of our building arts will be succeeded by another demonstration—that of the hackneyed architecture of bureaucracy, ever anxious to maintain its stranglehold on governmental building."

FORECAST

(Continued from page 2)

difficult for the market in general to achieve important gains over the coming year. The most likely prospect will be a moderate decline in new home building and a slight expansion in repair and modernization work.

"Some of the brightest prospects for construction during the remainder of 1959 and in 1960 are to be found in the non-residential field. Commercial building is quite strong and continuing to expand as new office structures, stores, and recreational projects are being authorized on a wide front. At least a small boom in new industrial building now seems to be getting under way as a part of the general recovery in new plant and equipment expenditures.

"The rise in the construction of religious buildings seems almost certain to persist. Public and allied institutional buildings have held at a fairly steady level in recent months and no important changes are on the horizon. The effect of local citizenry objections to rising taxes is reflected in the lagging volume of new educational structures in many sections of the country. The overriding of the presidential veto of the public works bill foreshadows some increase in heavy engineering construction in contrast to the slackening trend which has been evident during the past year.

"Except for some specialized materials with attractive cost-saving, installation and design features, the building materials industry seems to have ample capacity to meet all requirements during the coming year. Competition among home builders can only intensify in the face of tightening money conditions. In large contract construction where activity has been reduced since the recession, an upturn is in prospect, with some resultant firming in contract prices. The persistent rise in labor costs in the building field offers little encouragement for any significant improvement in over-all building costs during the coming year.

"In summary, while much of the recent over-all expansionary force in construction has now been lost, many dynamic changes are in the offing. These foreshadow many growing market and profit opportunities ahead."

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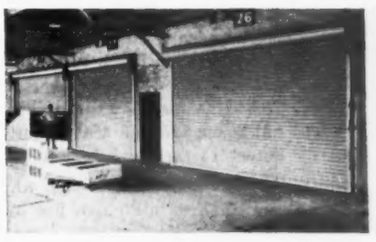

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digest: 11

SIGNALS AND SIGNALING

An outline of signals and signaling based on material prepared by Lee T. Chandler, Technical Products Manager, Edwards Co., Inc., Norwalk, Conn.

Definition

A signal is a piece of information. Signaling is the transmission of intelligence (a message). The process of signaling is divided into three elements: activation, transmission and reception. *Activation* occurs when an initiating device such as push button, thermostat or alarm station is operated. *Transmission* is the actual moving of information, usually by wire. *Reception* is the end process where "action" takes place through such media as horns, bells, chimes, loudspeakers, etc. A signaling system is an electrically operated network of signal initiators, wires and receivers designed to carry needed information from one place to another.

Role of signaling systems

1. Contribute toward greater safey by protecting against damage or loss from fire, illegal entry, machinery or process breakdown, etc.
2. Streamline administration, communications and scheduling.

Basic types of signaling systems

1. *Fire alarm systems:* indicate, for protection of life and property, existence of fire. Upon detection of blaze, immediate alert is sounded, notifying occupants of danger.

   In any fire alarm system, detection can be accomplished in three ways:

   a. *Manually:* to report fire, someone must first detect blaze, then operate alarm pullbox.
   b. *Automatically:* fire detectors, operating on heat level and/or rate of rising temperature, cause immediate signal to sound, without any human assistance.
   c. *Combinations* of (a) and (b), above, using manual boxes for well traveled areas and automatic detectors for more remote, fire prone locations.

   All local fire alarm systems, where permitted, can be connected to municipal fire headquarters in two ways:

   a. *Auxiliary:* local system connected directly into municipal fire alarm network.
   b. *Remote station:* local system connected to fire headquarters by leased direct telephone lines.

   Various fire alarm systems differ in the manner they detect and warn of fire. Principal types of systems include:

   a. *Coded:* sound four rounds of fire code on single stroke bells, upon operation of any pullbox or detector. Different code assigned to each fire station or group of stations. Code thus locates fire area, audibly.
   b. *Non-coded:* sound continuous evacuation signal upon operation of any station.
   c. *Master-coded:* sounds either four rounds of common code or a continuous march-time rhythm (120 beats/second) upon detection of fire.
   d. *Pre-signal, coded:* sends two-stage fire alerts. Stage one—coded alarm sounded on selected signals only, notifying authorities of fire condition. Stage two—general evacuation alarm, turned in only by authorized personnel.
   e. *Zoned, non-coded:* (composed principally of automatic detectors; operates on economical low voltage wiring; contains optional secondary power supply.) Sounds continuous fire signal and indicates fire area visually, by means of area indicating lamps.

2. *Clock systems:* designed so that all clocks within a given installation: show the correct time; can be controlled from a central point, thus permitting changes (i.e., from standard to daylight savings or vice versa) and corrections (for power failures, etc.). Principal types of clocks available include:

   a. *Dual Telechron-motored:* each clock contains two motors, one for normal operation, the second for reset at ten times normal speed. No master clock is required. Corrections for power failure are made when power is restored.
   b. *Minute impulse:* master clock sends electrical impulses over closed circuit once every 60 seconds, causing hands on slave clocks to move minute-by-minute.
   c. *Synchronous motored, hourly corrected:* master clock corrects all slave units hourly. Corrections (for power interruption, "scattering," etc.) are made only in 59th minute of each hour. If power outage is over one hour, correction takes place every 12 hours.
   d. *Electronic, synchronous motored:* operates in same manner as type (c), except clocks are individually connected to power supply circuit. Correction for "scattering" accomplished every 59th minute via high frequency carrier current sent over 115 v network by electronic transmitter. Each clock contains a receiver.

(Continued on page 39)

(Continued from page 7)

accomplishment will take a period of years to complete, and is expected ultimately to be the most comprehensive technical center of its kind ever built.

Named as the architects for the new community of laboratories, development facilities, and administrative and recreational installations, is the New York architectural firm of Harrison and Abramovitz, associate architects in the new facility of the Pittsburgh firm of Deeter and Ritchey.

Thus far, *Alcoa* has earmarked appropriations in excess of $30 million for its new research and development center. Ultimate costs undoubtedly will be much larger, but cannot be estimated until planning has significantly progressed.

The *National Association of Home Builders and The American Institute of Architects* held their first joint "Design Clinic" at the University of Florida at Gainesville on November 4-7. The Clinic is designed to further the home builders' appreciation of design and to give architects an opportunity to consider the home builders' problem of costs. Among the participating panelists and speakers at the Clinic were Prof. James T. Lendrum, head of the Department of Architecture at the University of Florida; Edward Fickett, AIA, of Los Angeles and chairman of the AIA's Committee on the Home Building Industry; Stanley Edge, Pittsburgh marketing consultant, and James Smith of Miami, Fla., an interior designer. Basic principles of architectural design and aesthetics, as well as planning efficiencies, were part of the program.

Here and there

The *Architectural League of New York* recently celebrated achievements in the building arts for homes and apartments with a dinner-discussion meeting at the League headquarters in New York. The meeting was part of a month-long exhibit called "Living." Forty models and mounted illustrations of recently built, distinguished hotels, motels, homes and apartments were on display. Edward Larrabee Barnes, AIA, James Rose, landscape architect, and Victor C. Gruen, AIA.

and Edgardo Contini, AIA of Victor Gruen Associates of Los Angeles were speakers for the Building Arts program. This exhibit is the second of six exhibits that will precede the League's 61st National Gold Medal Exhibition of the Building Arts scheduled for February, 1960. The Gold Medal show will be dedicated to progress in the interrelationship of the arts of architecture and interior design, engineering, murals, sculpture, landscape architecture, industrial design and craftsmanship. Morris Ketchum, Jr., FAIA, League President and partner in the New York architectural firm of Ketchum and Sharp, declared the League's interest in all the building arts as follows: "For nearly 80 years, the League has stood for the belief that architecture provides a framework for all the building arts and that without these building arts no work of architecture is fully realized."

Currently under construction is a new $12 million cement plant of the Hawaiian Cement Corp. rapidly rising on 27 acres at Barber's Point on Leeward Oahu, Hawaii. This plant has already received some of the largest pieces of mechanical equipment ever brought into the islands. The plant will be in operation next summer with a capacity of one million barrels annually. Construction of the plant is a joint building venture of Hawaiian Dredging & Construction Co. and the Bechtel Corp. Hawaiian Cement expects to employ some 150 persons.

Plans and specifications for New Orlean's largest office building, a 28-story structure at 225 Baronne, will be completed the latter part of November by architects, Shaw, Metz and Associates, of Chicago. Named rental agent for the project is Cushman and Wakefield of New York, according to John J. Mack, sponsor of the building.

The Light & Power Utilities Corp. of Memphis, Tenn., will open a second plant next spring in Olive Branch, Miss., according to L&P president, Murray Reiter. The company is a manufacturer of commercial and industrial fluorescent and incandescent lighting fixtures. The factory, being built at a cost of $600,000 and providing 112,000 square feet of space, was designed by architects Lee. Bromfield and Riggens of Jackson, Miss.

3. *Program systems:* automatically activate schedule changing signals at pre-established times of the day or night. Principal types of program instruments include:
   a. *Drum type:* one revolving Telechron-motored metal drum contains 1,440 pre-drilled holes (number of minutes in a day). Another is drilled for days of the week. To schedule program, pins are inserted in holes corresponding to desired day and time. As drum revolves, pins pass across contacts, thus causing signals to operate. To change program, pin is pulled out and inserted elsewhere on drum.
   b. *Tape type:* paper tapes, calibrated into minutes, operate these systems. To set up program, tape is removed and holes must be punched at desired minutes. To change program, entirely new tape must be punched.
   c. *Miscellaneous:* other systems use, in their program mechanisms, beaded chains, pin-roller arrangements, etc. Essentially, all depend upon a contactor momentarily closing a circuit at a pre-determined time.
4. *Clock and program systems:* provide simple flexible means of programming activities and indicating correct time from a central point, using elements described in (2) and (3), above.
5. *Paging systems:* are designed to call or locate individuals within a given premise. Among the various paging systems available are:
   a. *Coded:* consists of a control panel and a number of single stroke bells or chimes. Each key person is assigned a coded number. To page, operator selects proper code number on panel. Code then sounds over audible signals.
   b. *Sound:* consists of a microphone and a series of loudspeakers. Key people are paged by name.
   c. *Visual:* consists of control panel and flashing lamp annunciators. Each person assigned a number. To page, operator selects number on panel. Number then flashes on annunciators.
   d. *Wireless:* consists of pocket receiver units and central transmitter. Page may be either a buzzing sound or one-way message to pocket receivers.
6. *Interior telephone systems:* permit contact between buildings, floors, departments or individual offices without tying up regular switchboard. Among types available for operation without switchboards are:
   a. Two-party system.
   b. Common talking, selective ring.
   c. Selective talking, selective ringing (button or dial type).
7. *Nurse's call systems:* used by patients to summon nurses. Such systems are of two general types, visual only or audio-visual.
   a. *Visual:* pressing bedside button lights lamps in nurse's station and over corridor door. In addition, a momentary audible signal (buzzer or chime) also sounds at nurse's and utility stations when the system is operated. Nurse responds to call by going to bedside. System is reset at bedside.
   b. *Audio-visual:* to operate, patient presses button in usual manner, causing lights to operate as in visual system. Nurse answers call from master station and converses with patient via handset and bedside speaker/microphone. In automatic reset type, system returns to normal automatically when nurse uses handset. (Variation: The locking button version requires manual resetting at bedside by nurse of patient.)
8. *Miscellaneous systems:*
   a. Burglar alarms.
   b. Watchman's tour systems.
   c. Return-call annunciator systems.
   d. In-and-out registers (see hospitals).

Applications of signaling systems

1. *INDUSTRIAL*

   Fire alarm: small structures—a zoned, non-coded system will indicate location of fire at a central point. In larger factories and plants, pre-signal coded systems are recommended so location of fire is known everywhere on premises. The pre-signal feature avoids a general evacuation until it becomes necessary.

   Clock and program: operates industrial horns, bells or buzzers to indicate shift changes, rest periods, lunch periods, etc.

   Paging: locate key personnel such as managers, foremen or supervisors. Should be of the automatic coded type using either industrial chimes or single stroke bells. Visual system used in extremely noisy areas.

   Interior telephone: in small plants, selective-ringing, common talking type. In larger installations, selective talking, selective ringing systems used.

   Watchman's tour system: stations consisting of a telephone jack and pilot lamps installed in outlying areas. Watchman making round carries handset equipped with cord and plug. Lamp notifies watchman he is to call headquarters.

   In-and-out register: indicates absence or presence of key executives to receptionist or switchboard operator.

2. *COMMERCIAL STRUCTURES*

   Banks

   Fire alarm: non-coded, with automatic detectors throughout file and record storage areas and manual stations elsewhere.

   Clock system: clocks throughout public and office areas.

   Paging system: coded type, using commercial-type chimes.

   Guard call: at each teller's position are two switches, connected to annunciator in guard area. Operation of one switch sounds a chime and lights green annunciator lamp—indicating normal call. Second switch causes red annunciator lamp to light, indicating non-routine call requiring immediate attention.

   Burglar alarm: usually extremely comprehensive, custom-designed systems.

   Interior telephone: selective ringing, selective talking systems since privacy is desirable.

(*Continued on page 40*)

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Hotels

Fire alarm: pre-signal, coded, with a combination of automatic detectors and manual stations throughout.

Paging: coded type using chimes (installed throughout).

Hold-up alarm: operation of switches at clerk's or manager's position, or in disbursing area sounds alert in house officer's office.

Office buildings

Fire alarm: zoned, non-coded system employing either horns or bells (especially in maintenance areas and superintendent's office). Automatic detectors in file rooms and other fire prone areas.

Clock and program: if building occupied by one tenant, multiple schedule system can be installed throughout. If many tenants in one building, then individual systems may be needed.

Watchman's tour: signals should terminate in superintendent's office. Otherwise, see "industrial."

Restaurants

Fire alarm: non-coded, with automatic detectors throughout kitchen area, manual stations elsewhere.

Waitress call system: push button at each table location, annunciator in kitchen.

Hold-up alarm: push button at register area, signals in manager's office, also recommended for exterior installation.

Department stores

Fire alarm: zoned, non-coded with automatic detectors throughout; alarm signals (vibrating bells) in all normally occupied areas.

Clock system: see "banks."

Paging: coded type, using heavy-duty chimes (since noise level is usually high).

Interior telephone: provision should be made for lines between departments and floor manager, and between floor manager and store manager. Should be selective systems since privacy is desirable.

Theaters

Fire alarm: zoned, coded, with completely automatic detection, especially in smoking lounges, restrooms, stage, lighting and projection areas.

Interior telephone: between projection booth and manager's office, in moving picture theaters. In legitimate playhouses, from lighting control booth and orchestra to stage manager.

3. *SCHOOLS*

Elementary

Fire alarm: non-coded or master coded, since evacuation is of prime importance. Manual stations in well trafficked areas, detectors in hazardous areas. Remote or auxiliary connection to municipal fire headquarters. Fire signals must be distinctive (if bells used in program system, the fire signals should be horns or buzzers or vice versa).

Clock and program: clocks in each room and in corridors. Program control instrument in principal's office.

Interior telephone: handset in each room (allows private conversations between teachers and office).

High schools

Fire alarm: coded system, since this audibly locates fire and aids faculty in choosing safe exit paths. Otherwise, as elementary schools.

Clock and program: same as elementary schools, but with addition of multiple schedule program instrument and bell control board to change individual room signals from one program to another.

College buildings

Fire alarm: in dormitories, should be completely automatic systems such as zoned, non-coded. In academic structures may be coded system.

Clock and program: same as high schools.

Return call: in dormitory rooms, to summon residents to the telephone.

4. *INSTITUTIONS*

Hospitals

Fire alarm: a pre-signal system is required, since immediate evacuation of bed-ridden patients might be unnecessary. Automatic detectors in storage areas, pharmacy, and operating theaters.

Paging system: either silent or audible, to locate physicians and hospital personnel.

Nurse's call: usually audio-visual, with automatic reset feature. Special psychopathic application can be made, whereby an emergency alarm can be combined with nurse's call, so that nurse can summon help while in violent patient's room by touching push button.

Clock systems: same requirements as in banks, commercial buildings. Synchronous systems a necessity.

In-and-out registers: designate which physicians and staff members are present in the hospital. Usually, two are installed and keyed together, one at the main entrance and one near the telephone switchboard. An optional flashing "recall" feature notifies incoming physicians of waiting message.

Interior telephones: selective-ringing, selective-talking systems between nurses' stations and administrative areas, pharmacies, etc.

Pharmacy storage alarm: to protect valuable drugs and narcotics. Signals in security and administrative areas.

5. *PUBLIC ADMINISTRATION BUILDINGS*

Generally, would follow recommendations for office structures.

6. *CHURCHES*

Fire alarm: zoned, non-coded, with automatic fire detectors throughout, especially in organ lofts, altar boys' rooms, etc. Extension signals in rectory and sexton's office (or nearby).

Clock system: synchronous system or individual clocks, depending on size of building.

Telephone system: to call choir or sexton from sacristy.

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16-18 STRUCTURAL CLAY PRODUCTS INST: Silver Anniversary convention, Greenbrier Hotel, White Sulphur Springs, W. Va.

Dec. 2-3 ASPHALT INST: annual meeting, Shoreham Hotel, Washington, D. C.

1-4 NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSN: annual convention, Chase Park-Plaza Hotel, St. Louis.

6-9 AMERICAN INST OF CHEMICAL ENGINEERS: meeting, Sheraton Palace, San Francisco, Calif.

9 NATIONAL ASSN OF HOME BUILDERS: southern rental housing conference, Dinkler Plaza, Atlanta, Ga.

12-15 INDUSTRIAL BUILDING EXPOSITION & CONGRESS: Coliseum, New York City.

20-30 ARCHITECTURAL INST OF JAPAN, KYOTO AND OSAKA: annual convention.

Jan. 25-28 PLANT MAINTENANCE & ENGINEERING SHOW: Convention Hall, Philadelphia, Pa.

25-29 STRESS MEASUREMENT SYMPOSIUM: Arizona State University.

Feb. 1-4 AMERICAN SOC OF HEATING AND AIR-CONDITIONING ENGRS: annual meeting, Dallas, Tex.

2-4 SOC OF THE PLASTICS INDUSTRY: 15th reinforced plastics division conference, Edgewater Beach Hotel, Chicago, Ill.

14-18 AMERICAN INST OF MINING, METALLURGICAL, AND PETROLEUM ENGRS: annual meeting, NEW YORK CITY.

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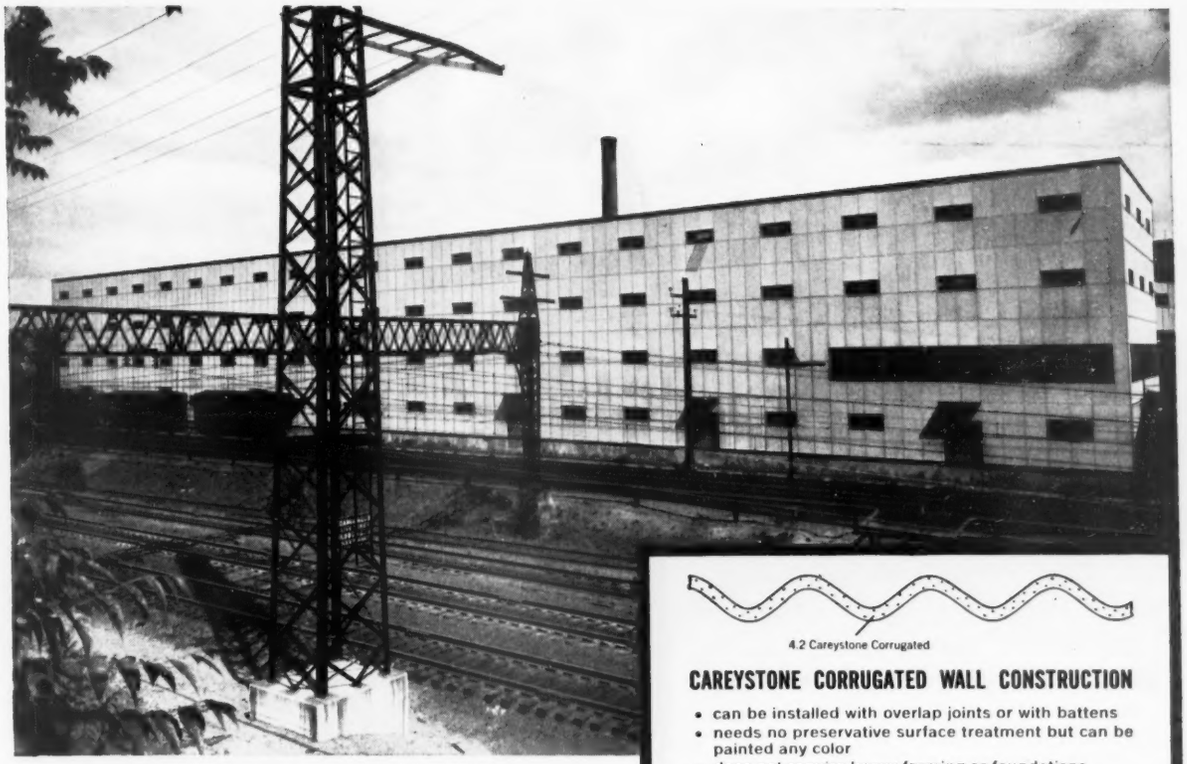

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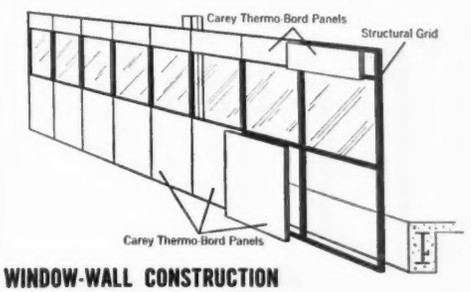

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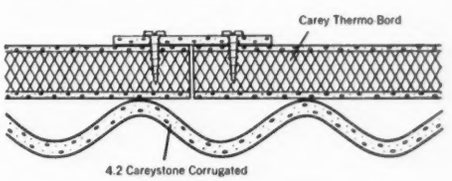

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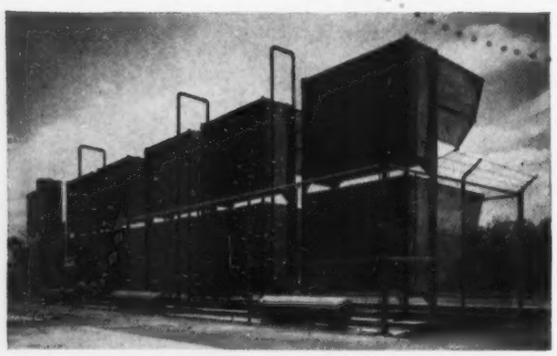

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